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# EXPERIMENT/FACILITY REQUIREMENTS DOCUMENT FOR THE SPACE STATION FURNACE FACILITY

## SECTION 1: INTEGRATED CONFIGURATION-1


(NASA-CR-192533) EXPERIMENT/FACILITY REQUIREMENTS DOCUMENT FOR THE SPACE STATION FURNACE FACILITY. SECTION 1: INTEGRATED CONFIGURATION Final Report (Teledyne Brown Engineering) 350 p

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## FOREWORD

The Space Station Furnace Facility (SSFF) is designed to accommodate and support a variety of furnace modules throughout the operational lifetime of the facility. Since the SSFF will be operational for 30 years, and various furnace modules will be accommodated, the Experiment/Facility Requirements Document (E/FRD) is divided into two separate sections. Section 1 describes the integrated SSFF-to-SSF interface, which includes the SSFF Core subsystem requirements and the furnace module requirements based on the information obtained from the Furnace Developer's Section 2, and Section 2 describes the furnace module-to-SSFF interface. Multiple Section 2s may be required for each E/FRD, depending on how many furnace modules the SSFF will accommodate per mission, since a separate Section 2 will be written for each furnace module. Both sections will be replaced for each mission with the appropriate mission-peculiar furnace module interface requirements since the Core configuration is a function of the furnace module(s).

This E/FRD reflects the Initial Configuration-1 (IC1), which is the initial integration of the SSFF Core and Furnace Module-1 into the SSF U. S. Laboratory Module-A. IC1 is planned for 1997, based on the assumption that Utilization Flight 3 (UF-3) is the carrier. Furnace Module-1 is scheduled to be an upgrade of the present Crystal Growth Furnace (CGF), and Section 2 reflects the requirements of that module.

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# ACRONYM LIST

| | |
|---|---|
| AA | Avionics Air |
| CCF | Centralized Core Function |
| CCOS | Centralized Core Operating System |
| CCU | Core Control Unit |
| CdTe | Cadmium Telluride |
| CGF | Crystal Growth Furnace |
| cm | Centimeter |
| CMCU | Core Monitor and Control Unit |
| CP | Coldplate |
| CPC | Core Power Conditioners |
| CPCS | Core Power Conditioners Stimulus |
| CRW | Crew |
| CSF | Core-Specific Function<br>Data Management Subsystem (SSFF) |
| DC | Direct Current |
| DCF | Distributed Core Function |
| DCMU | Distributed Core Monitoring Unit |
| DCOS | Distributed Core Operating System |
| dia | Diameter |
| DMS | Data Management System (SSF) |
| DR | Data Requirement |
| E/FRD | Experiment/Facility Requirements Document |
| EAC | Experiment Apparatus Container |
| EPS | Electrical Power System |
| ESF | Experiment-Specific Function |
| Ess | Essential |
| FAU | Furnace Actuator Unit |
| FCU | Furnace Control Unit |
| FDACS | Furnace Data Acquisition and Control System |
| FDDI | Fiber Distributed Data Interface |
| FDIR | Fault Detection, Isolation, and Recovery |
| FDS | Fire Detection and Suppression |
| FM-1 | Furnace Module-1 |
| FO | Functional Objective |
| ft | Foot |

## ACRONYM LIST (Cont.)

| | |
|---|---|
| $ft^2$ | Square foot |
| FTM | Furnace Translation Mechanism |
| g | Gravity |
| GaAs | Gallium Arsenide |
| GDS | Gas Distribution Subsystem |
| GHE | Gaseous Helium |
| $GN_2$ | Gaseous Nitrogen |
| GND | Ground |
| GSE | Ground Support Equipment |
| H/W | Hardware |
| $H_2O$ | Water |
| HDR | High-Density Recorder |
| HgZnTe | Mercury Zinc Telluride |
| HRDL | High-Rate Data Link |
| h | Hour |
| HX | Heat Exchanger |
| Hz | Hertz |
| IC1 | Integrated Configuration-1 |
| IROP | Integrated Requirements on Payloads |
| IFEA | Integrated Furnace Enclosure Apparatus |
| ISPR | International Standard Payload Rack |
| ISS | Internal Support Structure |
| JSC | Johnson Space Center |
| kg | Kilogram |
| KSC | Kennedy Space Center |
| kW | Kilowatt |
| kWh | Kilowatthour |
| LAN | Local Area Network |
| lbm | Pound Mass |
| LNS | Liquid Nitrogen System |
| MBPS | Megabytes per Second |
| MDM | Multiplexer/Demultiplexer |
| mm | Millimeter |
| MPAC | Multipurpose Application Console |

## ACRONYM LIST (Cont.)

| | |
|---|---|
| MPLM | Mini-Pressurized Logistics Module |
| MSFC | Marshall Space Flight Center |
| MSS | Mechanical Structures Subsystem |
| NASA | National Aeronautics and Space Administration |
| NTSC | National Television Standard Committee |
| OMIS | Operations Management Information System |
| ORU | Orbital Replacement Unit |
| PAM | Payload Accommodations Manager |
| PCDS | Power Conditioning and Distribution Subsystem |
| PED | Payload Element Developer |
| PES | Payload Executive Software |
| PI | Payload Investigator |
| PIC | Payload Integration Center |
| PIM | Payload Increment Manager |
| PLM | Pressurized Logistics Module |
| POIC | Payload Operations Integration Center |
| ppm | Parts per Million |
| psia | Pounds per Square Inch Absolute |
| PTRD | Payload Training Requirements Document |
| QD | Quick Disconnect |
| RFM | Reconfigurable Furnace Module |
| RPC | Remote Power Controller |
| RPCM | Remote Power Controller Module |
| RPDA | Remote Power Distribution Assembly |
| S/W | Software |
| SACA | Sample Ampoule/Cartridge Assembly |
| sec | Second |
| SEM | Sample Exchange Mechanism |
| SIP | Sample Insertion Port |
| SS | Subsystem |
| SSF | Space Station Freedom |
| SSFF | Space Station Furnace Facility |
| STS | Space Transportation System |
| SW | Software |

## ACRONYM LIST (Conc.)

| | |
|---|---|
| TAT | Training Assessment Team |
| TBD | To Be Determined |
| TCS | Thermal Control System (SSF)<br>Thermal Control Subsystem (SSFF) |
| UF-3 | Utilization Flight 3 |
| UPTP | User Payload Training Plan |
| USL | United States Laboratory |
| V | Volt |
| Vdc | Volts Direct Current |
| VES | Vacuum Exhaust System |
| W | Watt |
| μm | Micrometer |
| MΩ | Megohm |

# 1.1. FUNCTIONAL OBJECTIVES AND EQUIPMENT IDENTIFICATION

## 1.1.1 SYSTEM DESCRIPTION

The function of the Space Station Furnace Facility (SSFF) is to support materials research into the crystal growth and solidification processes of electronic and photonic materials, metals and alloys, and glasses and ceramics. To support this broad base of research requirements, the SSFF will employ a variety of furnace modules operated, regulated, and supported by a core of common subsystems. Furnace modules may be reconfigured or specifically developed to provide unique solidification conditions for each set of experiments. The SSFF modular approach permits the addition of new or scaled-up furnace modules to support the evolution of the facility as new science requirements are identified. The SSFF Core is of modular design to permit augmentation for enhanced capabilities.

The fully integrated configuration of the SSFF will consist of three racks with the capability of supporting up to two furnace modules per rack. The initial configuration of the SSFF will consist of two of the three racks and one furnace module. This Experiment/Facility Requirements Document (E/FRD) describes the integrated facility requirements for the Space Station Freedom (SSF) Integrated Configuration-1 (IC1) mission. The IC1 SSFF will consist of two racks: the Core Rack, with the centralized subsystem equipment, and the Experiment Rack-1, with Furnace Module-1 and the distributed subsystem equipment to support the furnace.

The IC1 SSFF configuration is shown in Figure 1.1-1. It consists of two double rack replacement structures, the centralized and distributed components to support furnace operations, and Furnace Module-1. The SSFF support functions are provided by the following Core subsystems:

- Power Conditioning and Distribution Subsystem (SSFF PCDS)
- Data Management Subsystem (SSFF DMS)
- Thermal Control Subsystem (SSFF TCS)
- Gas Distribution Subsystem (SSFF GDS)
- Mechanical Structures Subsystem (SSFF MSS)

## 1.1.2 FUNCTIONAL OBJECTIVES

There are 13 functional objectives (FOs) for the SSFF which are structured as one FO for payload checkout: one FO for Core activation; one FO for the distributed equipment activation; eight FOs for experiment sample operations, calibration/bakeout, and vent and purge cycles; one FO for furnace sample loading or shutdown; and one FO for SSFF shutdown. The actual FO numbering is as follows:

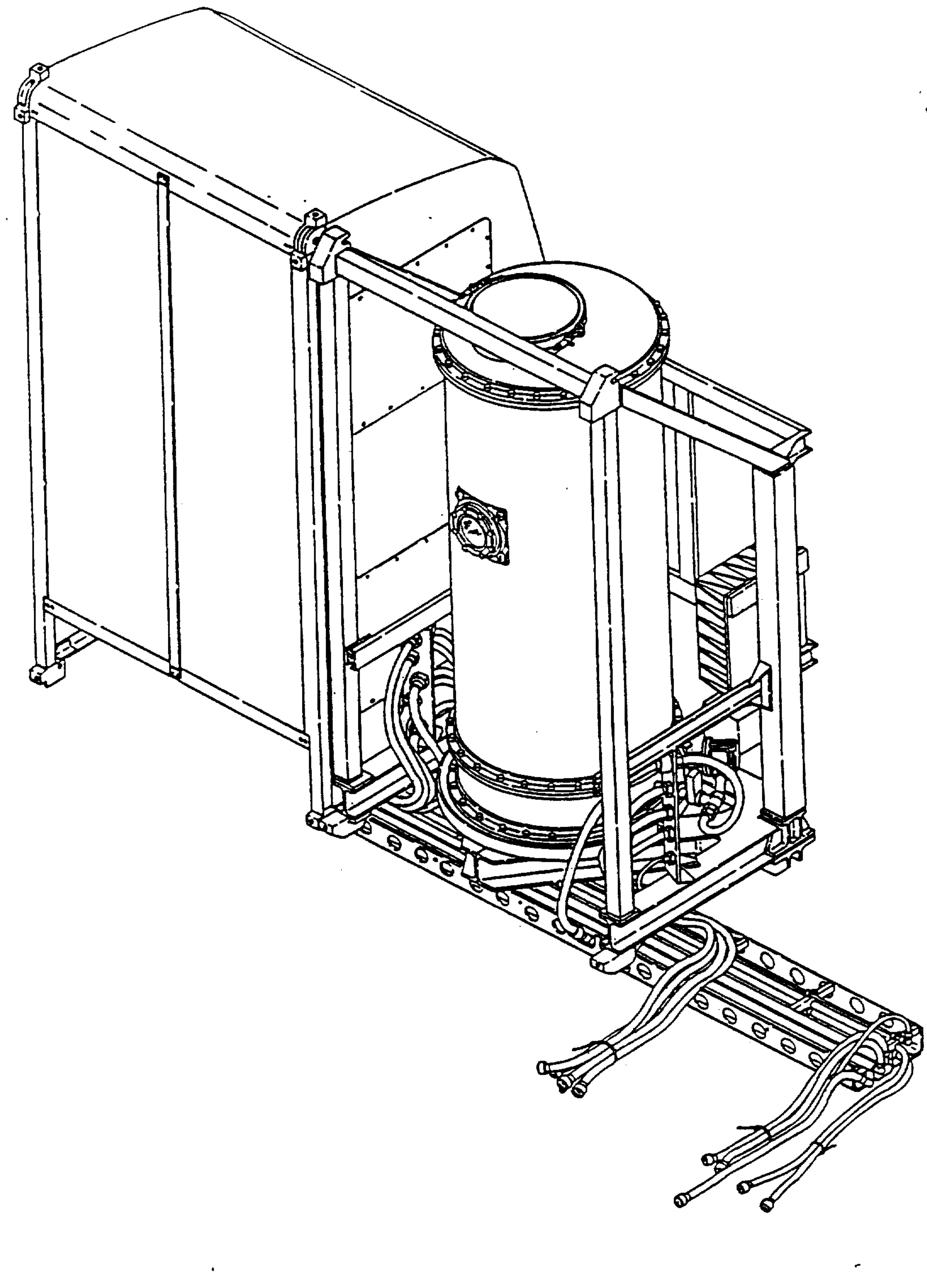


FIGURE 1.1-1. SSFF IC1 CONFIGURATION

FO-0 Payload Checkout
FO-1 Core Activation
FO-2 Distributed Equipment Activation
FO-3 Furnace Module-1 Sample Exchange
FO-4 Furnace Module-1 Vent/Purge
FO-5 Furnace Module-1 Process Sample HgCdTe
FO-6 Furnace Module-1 Process Sample HgZnTe
FO-6A Furnace Module-1 Process Sample Extended HgZnTe
FO-7 Furnace Module-1 Process Sample CdTe
FO-8 Furnace Module-1 Process Sample GaAs
FO-9 Configure Furnace Module-1 for Sample Loading or Shutdown
FO-10 SSFF Shutdown
FO-11 Furnace Module-1 Process Calibration/Bakeout

Table 1.1-1 shows a listing of the SSFF FOs along with the equipment associated with each step of each FO. Step duration, crew time requirements, and average power requirements for each step of each FO are defined in Table 1.1-2, Functional Objective Requirements Sheets.

### 1.1.3 EQUIPMENT IDENTIFICATION

The SSFF will occupy two double rack locations in the U. S. Laboratory (USL) for IC1. The Core Rack, modified [relative to the International Standard Payload Rack (ISPR)] to permit interconnections to the adjacent experiment rack, will provide mechanical/structural interface for the centralized SSFF subsystem components. Experiment Rack-1 will provide mechanical/structural interface for distributed SSFF subsystem equipment required to support the furnace operation, and Furnace Module-1. Figures 1.1-2 through 1.1-5 show the SSFF centralized and distributed equipment to the Orbital Replacement Unit (ORU) level per subsystem. Figure 1.1-6 shows the Furnace Module-1 equipment. A block diagram of the SSFF is shown in Figure 1.1-7, which identifies and shows the interrelationship of each item of SSFF equipment and the interfaces with SSF and the furnace module.

### 1.1.4 OPERATIONAL FUNCTIONAL FLOWS

Preliminary functional flows are shown in Table 1.1-3 for each FO. Functional flows define the function performed, the performing element, and decisions involved in accomplishing each FO.

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 1 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-1 Step 1 | CCU and CMCU Activation | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors |
| FO-1 Step 2 | SSFF to Ground Link | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors |
| FO-1 Step 3 | Test CMCU | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors |
| FO-1 Step 4 | Configure and Test<br>TCS in Core Rack | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 2 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-1 Step 5 | Test CPC | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Core Power Conditioners |
| FO-1 Step 6 | GDS Test | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Latching Solonoid Valves<br>Contamination Monitor |
| FO-1 Step 7 | Activate Camera and Videolink | NOT USED IN IC1 |
| FO-1 Step 8 | Core Readiness Check | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 3 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-1 Step 8 (Cont.) | Core Readiness Check | Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers |
| FO-2 Step 1 | CCU Powers RPCM/DCMU | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit |
| FO-2 Step 2 | CCU Powers FCU | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit |
| FO-2 Step 3 | FCU Checkout | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 4 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-2 Step 3 (Cont.) | FCU Checkout | Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit |
| FO-2 Step 4 | FAU Powered | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-2 Step 5 | FAU Checkout | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 5 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-2 Step 6 | Configure and Test TCS in Furnace Rack | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducer<br>Video Processor Unit<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-2 Step 7 | GDS Test | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 6 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-2 Step 8 | Furnace-Specific Tests | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 1 | Command Manual Sample Exchange | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 7 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-3 Step 2 | Vent/Fill Furnace Module-1 | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 3 | Equalize Furnace Module-1 Pressure | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Manual Valve |
| FO-3 Step 4 | Prep Equipment | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 8 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-3 Step 4 (Cont.) | Prep Equipment | Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 5 | Open SIP | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 6 | Insert Samples | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 9 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-3 Step 7 | Close SIP | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 8 | Open Valves | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Manual Valves |
| FO-3 Step 9 | Command Manual<br>Sample Exchange Off | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 10 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-3 Step 9 (Cont.) | Command Manual Sample Exchange Off | Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-3 Step 10 | Perform Seal Check | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-4 Step 1 | $GN_2$ Purge Furnace | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 11 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-4 Step 2 | Argon Backfill | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package.<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-4 Step 3 | Command Sample Process | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-4 Step 4 | TCS Configured | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 12 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-4 Step 3 (Cont.) | TCS Configured | Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit |
| FO-5<br>FO-6<br>FO-6a<br>FO-7<br>FO-8 | Vapor Crystal Growth of HgCdTe<br>Meltback and Regrowth of HgZnTe<br>Meltback and Regrowth of HgZnTe<br>Growth of CdTe by Dir. Solidification<br>Growth of GaAs by Dir. Solidification | All equipment listed below<br>All equipment listed below<br>All equipment listed below<br>All equipment listed below<br>All equipment listed below<br>Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 13 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-9 Step 1 | Verify Furnace in HOME Position | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |
| FO-9 Step 2 | Furnace-Specific Tests | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Video Processor Unit<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |
| FO-9 Step 3 | Furnace-Specific Tests | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 14 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-9 Step 3 (Cont.) | Furnace-Specific Tests | RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |
| FO-10 Step 1 | Distributed Equipment Shutdown | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers |
| FO-10 Step 2 | Verify Experiment Shutdown | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 15 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-10 Step 3 | Shut Down GDS Subsystems | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers |
| FO-10 Step 4 | DMS Nonessentials Shutdown | Core Control Unit<br>Core Monitor Control Unit<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers |
| FO-10 Step 5 | TCS Shutdown | Core Control Unit .<br>Core Monitor Control Unit<br>Essentials Power Supply<br>Voltage and Current Sensors |
| FO-10 Step 6 | CCU Shutdown | |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 16 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-11 Step 1 | Activate Calibration/Bakeout | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |
| FO-11 Step 2 | Initiate Calibration Process | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM<br>Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |
| FO-11 Step 3 | Bakeout Process | Core Control Unit<br>Removable Hard Drive<br>CDROM/WORM Drive<br>High-Density Recorder<br>Core Monitor Control Unit<br>Crew Interface<br>CPCS<br>RPCM |

TABLE 1.1-1. SSFF FUNCTIONAL OBJECTIVES (Sheet 17 of 17)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-11 Step 3 (Cont.) | Bakeout Process | Essentials Power Supply<br>Voltage and Current Sensors<br>Shutoff Valves<br>Pump Package<br>Flow Meters<br>Flow Control Valves<br>Temperature Sensors<br>Pressure Transducers<br>Distributed Core Monitoring Unit<br>Furnace Control Unit<br>Furnace Actuator Unit<br>Furnace Module-1 |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 1 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Payload Activation

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

FO NUMBER: 0

PREREQUISITE:

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 5:00 | 5:00 | 1:00 | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 0.00 | 0.00 | 0.00 | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Open TCS manual valves |
| 2 | Open GDS manual valves |
| 3 | Verify Station services activated at rack |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 2 of 19)

EXPERMENT NAME: Space Station Furnace Facility  FO NUMBER: 1
FO NAME: Core Activation  PREREQUISITE: FO-0
NO. OF PERFORMANCES: MIN.____ DES.____  SEQUENCE:
REQUIRED TIMEFRAME (MET): MIN.____ MAX.____  JOINT OPS WITH:

| STEP NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 5:00 | 2:00 | 1:00 | 4:00 | 3:00 | 7:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 1.008 | 1.008 | 1.008 | 1.1479 | 1.4637 | 1.2926 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate CCU and CMCU |
| 2 | SSF to ground initial link |
| 3 | Test CMCU |
| 4 | Configure and test TCS in Core |
| 5 | Test CPC |
| 6 | GDS tests in Core |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 3 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 1

FO NAME: Core Activation

PREREQUISITE: FO-0

NO. OF PERFORMANCES: MIN._____ DES._____

SEQUENCE: _____

REQUIRED TIMEFRAME (MET): MIN._____ MAX._____

JOINT OPS WITH: _____

| STEP NUMBER | | 7 | 8 | | | | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 5:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 1.1479 | 1.1479 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Activate camera and test videolink and high rate link (not used during MTC) |
| 8 | Core readiness check |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 4 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Distributed Equipment
NO. OF PERFORMANCES: MIN.____ DES.____
REQUIRED TIMEFRAME (MET): MIN.____ MAX.____

FO NUMBER: 2
PREREQUISITE: FO-1
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 1:00 | 2:00 | 2:00 | 2:00 | 2:00 | 5:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 1.3220 | 1.7620 | 1.7620 | 2.0988 | 2.0988 | 2.1136 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | CCU activates RPCM |
| 2 | CCU activates FCU |
| 3 | FCU checkout |
| 4 | FAU activation |
| 5 | FAU checkout |
| 6 | CCU configuration of TCS |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 5 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Distributed Equipment

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

FO NUMBER: 2

PREREQUISITE: FO-1

SEQUENCE: ______

JOINT OPS WITH: ______

| STEP NUMBER | | 7 | 8 | | | | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | :17 | 12:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1835 | 2.1336 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Checkout GDS components |
| 8 | Furnace specific tests |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 6 of 19)

EXPERMENT NAME: Space Station Furnace Facility　　FO NUMBER: 3

FO NAME: Manual Sample Exchange　　PREREQUISITE: FO-2

NO. OF PERFORMANCES: MIN._____ DES._____　　SEQUENCE: _____

REQUIRED TIMEFRAME (MET): MIN.____ MAX._____　　JOINT OPS WITH: _____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 1:00 | 32:00 | 10:00 | 10:00 | 7:00 | 20:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | 1 | | 1 | 1 | 1 | 1 |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1336 | 2.1487 | 2.1336 | 2.1336 | 2.1336 | 2.1336 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Command "Manual Sample Exchange" on |
| 2 | Vent/fill furnace module |
| 3 | Equalize furnace module pressure |
| 4 | Prep equipment |
| 5 | Open SIP |
| 6 | Insert samples |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 7 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NUMBER: 3
FO NAME: Manual Sample Exchange
PREREQUISITE: FO-2
NO. OF PERFORMANCES: MIN._____ DES._____
SEQUENCE:
REQUIRED TIMEFRAME (MET): MIN._____ MAX._____
JOINT OPS WITH:

| STEP NUMBER | | 7 | 8 | 9 | 10 | 11 | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 3:00 | 1:00 | 65:00 | 4:00 | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | 1 | 1 | 1 | 1 | 1 | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1336 | 2.1336 | 2.1336 | 2.1338 | 2.1336 | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Close SIP |
| 8 | Open valves |
| 9 | Command "Manual Sample Exchange" off |
| 10 | Perform seal check |
| 11 | Load list process |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 8 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Purge Furnace Module
NO. OF PERFORMANCES: MIN.______ DES.______
REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

FO NUMBER: 4
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 32:00 | 10:00 | 2:00 | 2:00 | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 2.1487 | 2.1487 | 2.1336 | 2.1639 | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | GN2 purge furnace |
| 2 | Argon backfill |
| 3 | Command sample process |
| 4 | TCS configured |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 9 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Vapor Crystal Growth of HgCdTe

NO. OF PERFORMANCES: MIN._____ DES._____

REQUIRED TIMEFRAME (MET): MIN._____ MAX._____

FO NUMBER: 5

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 188:00 | 60:00 | 480:00 | 240:00 | 21:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.2536 | 3.2496 | 2.5996 | 2.5996 | 2.2536 | 2.536 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Activate and process heat cycle |
| 3 | Anneal sample |
| 4 | Initiate vapor crystal growth processing |
| 5 | Cool sample and extract |
| 6 | Cool and stow |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 10 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 6

FO NAME: Meltback and Regrowth of HgZnTe

PREREQUISITE: FO-3

NO. OF PERFORMANCES: MIN.______ DES.______

SEQUENCE: ______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

JOINT OPS WITH: ______

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 340:00 | 120:00 | 125:00 | 600:00 | 7390:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.2536 | 2.7316 | 2.6496 | 2.6496 | 2.6496 | 2.6496 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Process heat cycle |
| 3 | Initial soak |
| 4 | Translation to growth position |
| 5 | Final soak |
| 6 | Directional solidification |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 11 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Meltback & Regrowth of HgZnTe

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

FO NUMBER: 6

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | 7 | 8 | | | | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 372:00 | 115:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.3246 | 2.1946 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool sample |
| 8 | Stow sample |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 12 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 6A

FO NAME: Meltback and Regrowth of HgZnTe (Extended)

PREREQUISITE: FO-3

NO. OF PERFORMANCES: MIN.____ DES.____

SEQUENCE: ____

REQUIRED TIMEFRAME (MET): MIN.____ MAX.____

JOINT OPS WITH: ____

| STEP NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 3:00 | 340:00 | 120:00 | 125:00 | 600:00 | 59957:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 2.2536 | 2.7316 | 2.6496 | 2.6496 | 2.6496 | 2.6496 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Process heat cycle |
| 3 | Initial soak |
| 4 | Translation to growth position |
| 5 | Final soak |
| 6 | Directional solidification |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 13 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Meltback and Regrowth of HgZnTe (Extended)

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED* TIMEFRAME (MET): MIN. ____ MAX.______

FO NUMBER: 6A

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | 7 | 8 | | | | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 372:00 | 115:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.3246 | 2.1946 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool sample |
| 8 | Internally stow sample |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 14 of 19)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 7

FO NAME: Growth of CdTe by Directional Solidification

PREREQUISITE: FO-3

NO. OF PERFORMANCES: MIN.____ DES.____

SEQUENCE: ____

REQUIRED TIMEFRAME (MET): MIN.____ MAX.____

JOINT OPS WITH: ____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 538:00 | 120:00 | 4278:00 | 438:00 | 208:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.2536 | 3.4786 | 3.3746 | 3.2996 | 2.7244 | 2.3746 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace module for processing |
| 2 | Process heat cycle |
| 3 | Soak |
| 4 | Process sample, directional solidification |
| 5 | Cool sample to 400 °C |
| 6 | Cool sample to 200 °C and internally stow sample |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 15 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Growth of GaAs by Directional Solidification
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN.____ MAX._____

FO NUMBER: 8
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 45:00 | 227:00 | 68:00 | 720:00 | 210:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.2536 | 2.9916 | 4.4866 | 3.4776 | 3.3926 | 2.8016 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace module processing |
| 2 | Preheat cycle |
| 3 | Process heat cycle |
| 4 | Soak |
| 5 | Translate furnace/process sample |
| 6 | Cool down to 800 °C |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 16 of 19)

EXPERMENT NAME: Space Station Furnce Facility

FO NAME: Growth of GaAs by Directional Solidification

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

FO NUMBER: 8

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| STEP NUMBER | | | 7 | | | | | |
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 466:00 | | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM . | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 2.2536 | | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool down to 200 °C and internally stow |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 17 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Configure Furnace for Shutdown/Sample Loading
NO. OF PERFORMANCES: MIN.____ DES.____
REQUIRED TIMEFRAME (MET): MIN.____ MAX.____

FO NUMBER: 9
PREREQUISITE:
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 5:00 | 1:00 | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1336 | 2.1336 | 2.1336 | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Verify furnace is in home position |
| 2 | Furnace specific tests |
| 3 | CCU secures power from furnace module |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 18 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NUMBER: 10
FO NAME: SSFF Shutdown
PREREQUISITE: FO-9
NO. OF PERFORMANCES: MIN._____ DES._____
SEQUENCE: _____
REQUIRED TIMEFRAME (MET): MIN._____ MAX._____
JOINT OPS WITH: _____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 3:00 | 5:00 | 1:00 | 1:00 | 1:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 1.1479 | 1.1479 | 1.1479 | 0.5612 | 0.3102 | 0.00 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Distributed Core Eq. shutdown |
| 2 | Verify experiment/furnace shutdown |
| 3 | GDS shutdown |
| 4 | DMS nonessential shutdown |
| 5 | TCS shutdown |
| 6 | CCU shutdown |

TABLE 1.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 19 of 19)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Furnace Calibration/Bakeout
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN._____ MAX._____

FO NUMBER: 11
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 1:00 | TBD | 480:00 | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1336 | TBD | TBD | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REAL-TIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POIC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate calibration/bakeout |
| 2 | Initiate calibration |
| 3 | Bakeout/calibration process |

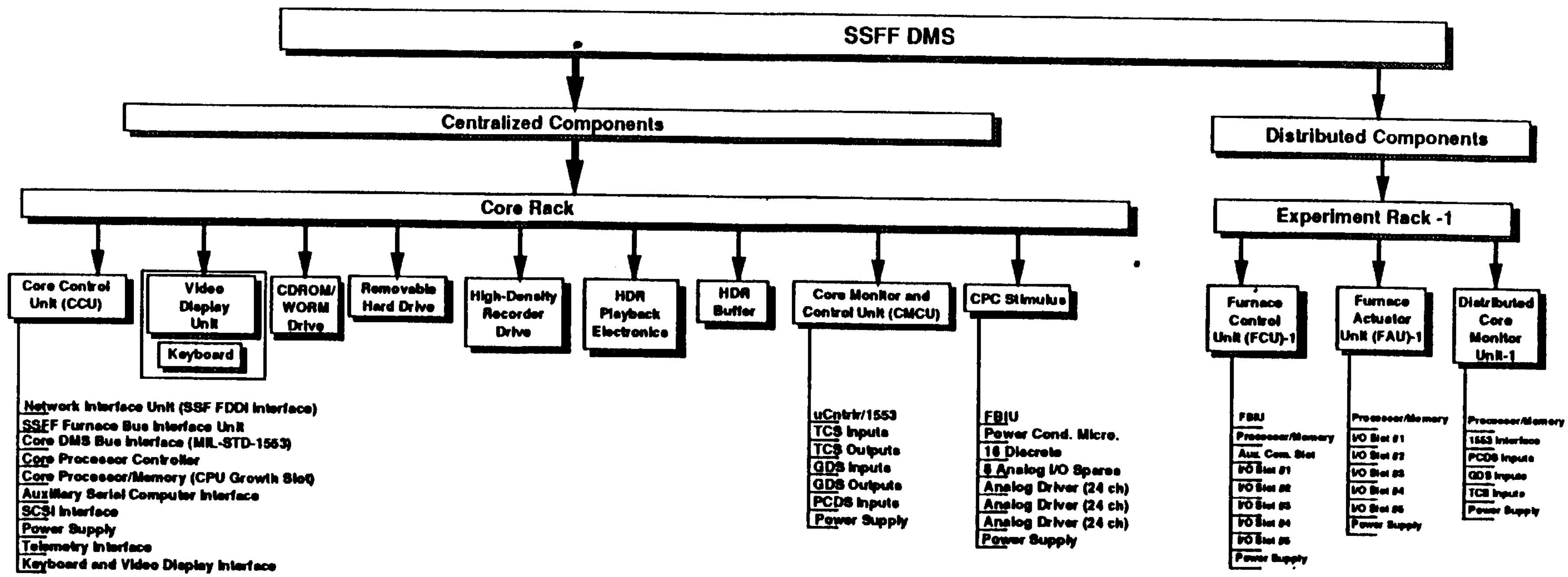



FIGURE 1.1-2. DMS COMPONENT TREE

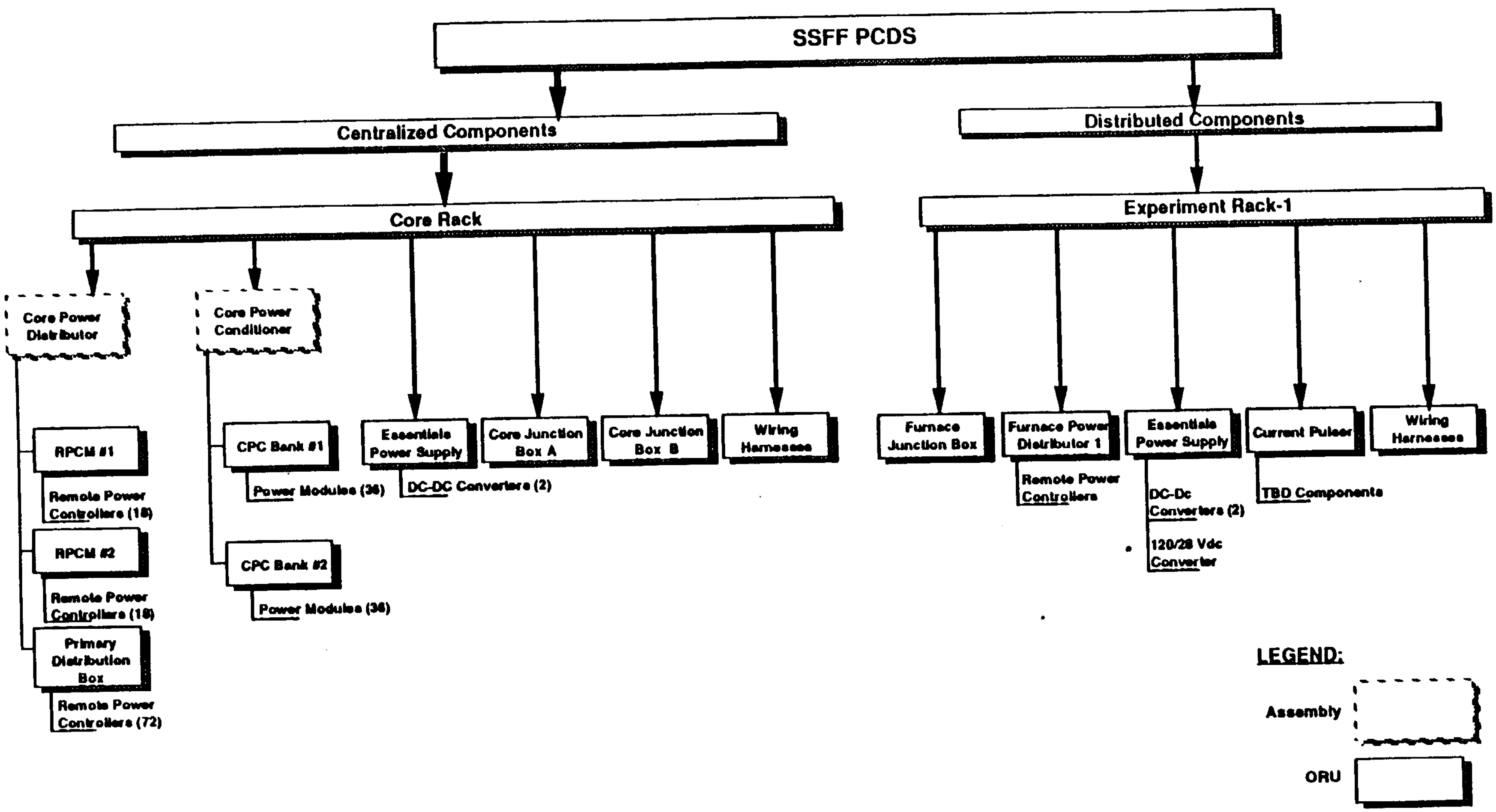
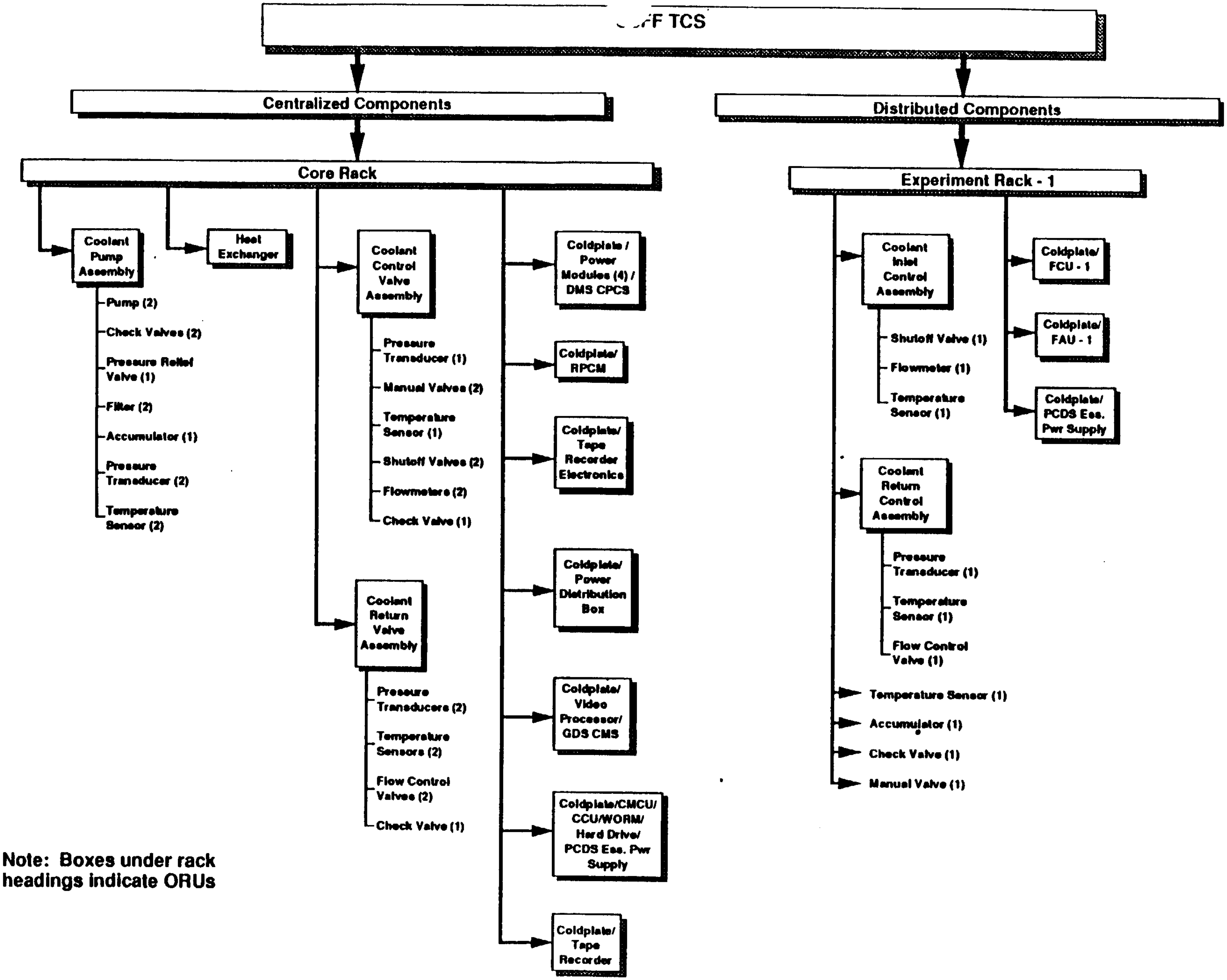



FIGURE 1.1-3. PCDS COMPONENT TREE




Note: Boxes under rack headings indicate ORUs

FIGURE 1.1-4. TCS COMPONENT TREE

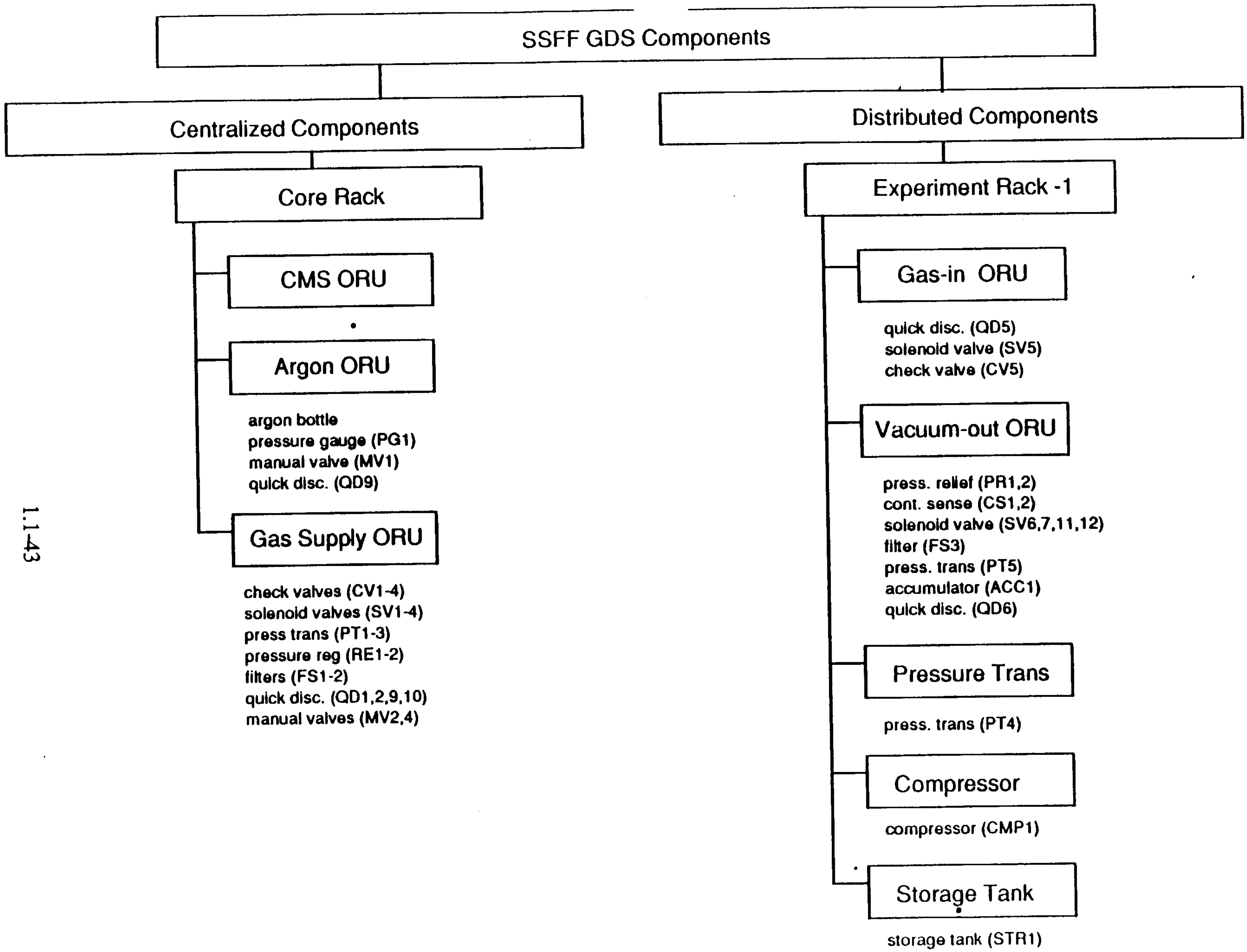



FIGURE 1.1-5. GDS COMPONENT TREE

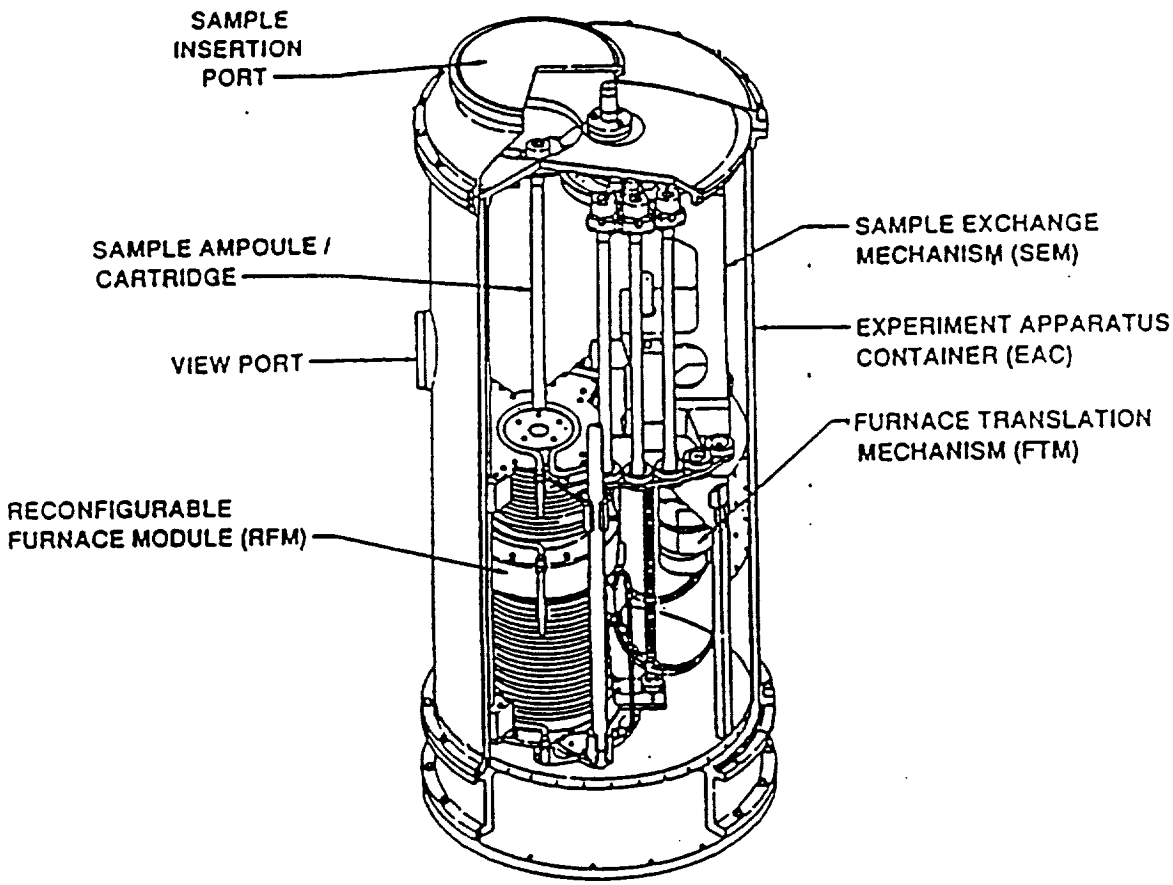



FIGURE 1.1-6. FURNACE MODULE-1 EQUIPMENT PICTORIAL REPRESENTATION

TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 1 of 19)

FO: 0 FO TITLE: PAYLOAD ACTIVATION AND CHECKOUT

| GND/PES/CRW FUNCTION | CENTRALIZED SS FUNCTIONS | DISTRIBUTED SS FUNCTIONS | FURNACE MODULE |
|---|---|---|---|
| STEP 1<br>OPEN TCS MANUAL VALVE<br>CRW | | | |
| ↓ | | | |
| STEP 2<br>OPEN GDS MANUAL VALVE<br>CRW | | | |
| ↓ | | | |
| STEP 3<br>VERIFY SSF SERVICES AT RACK<br>CRW | | | |
| ↓ | | | |
| END OF FO-0<br>PROCEED TO<br>FO-1 | | | |

TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 2 of 19)

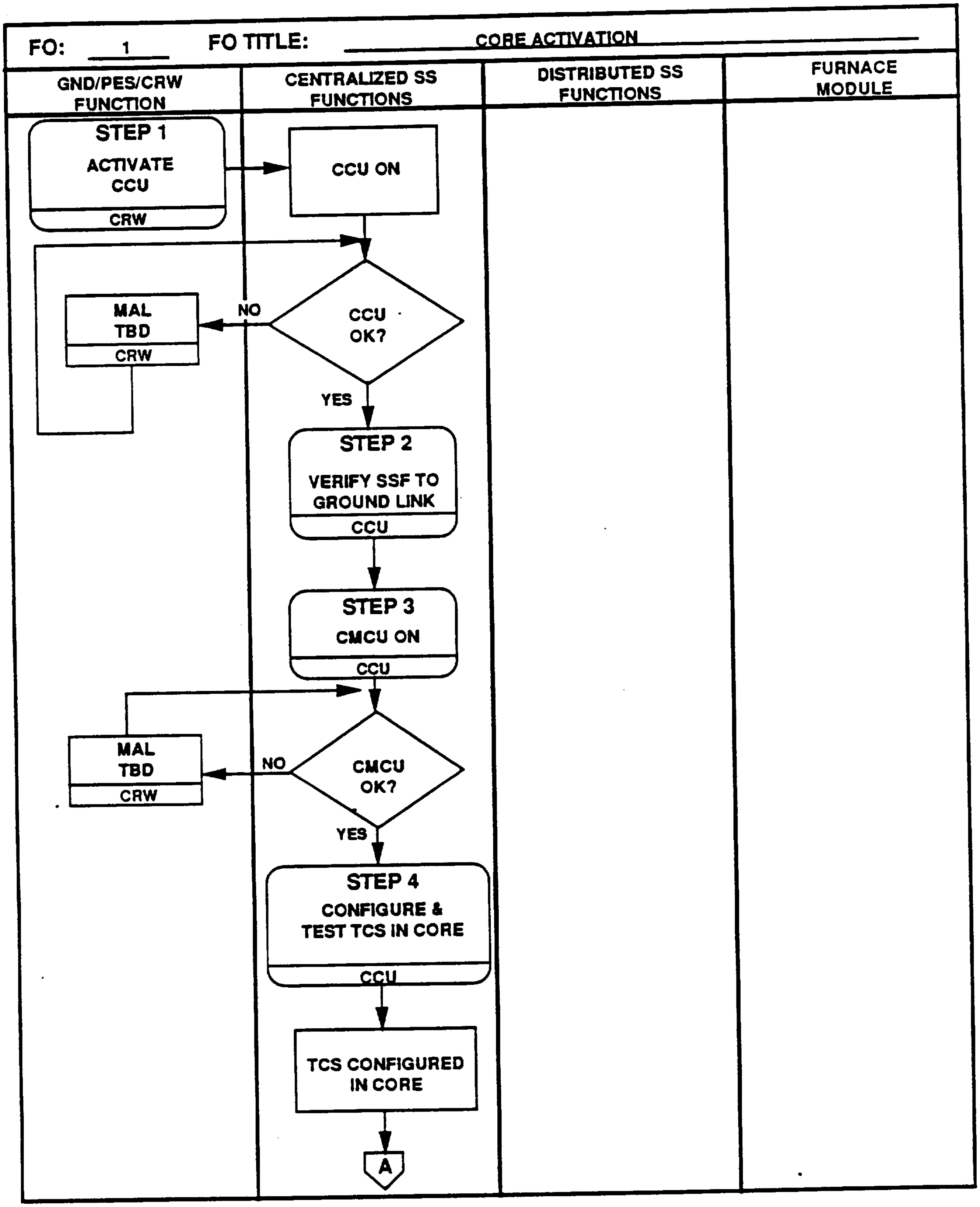


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 3 of 19)

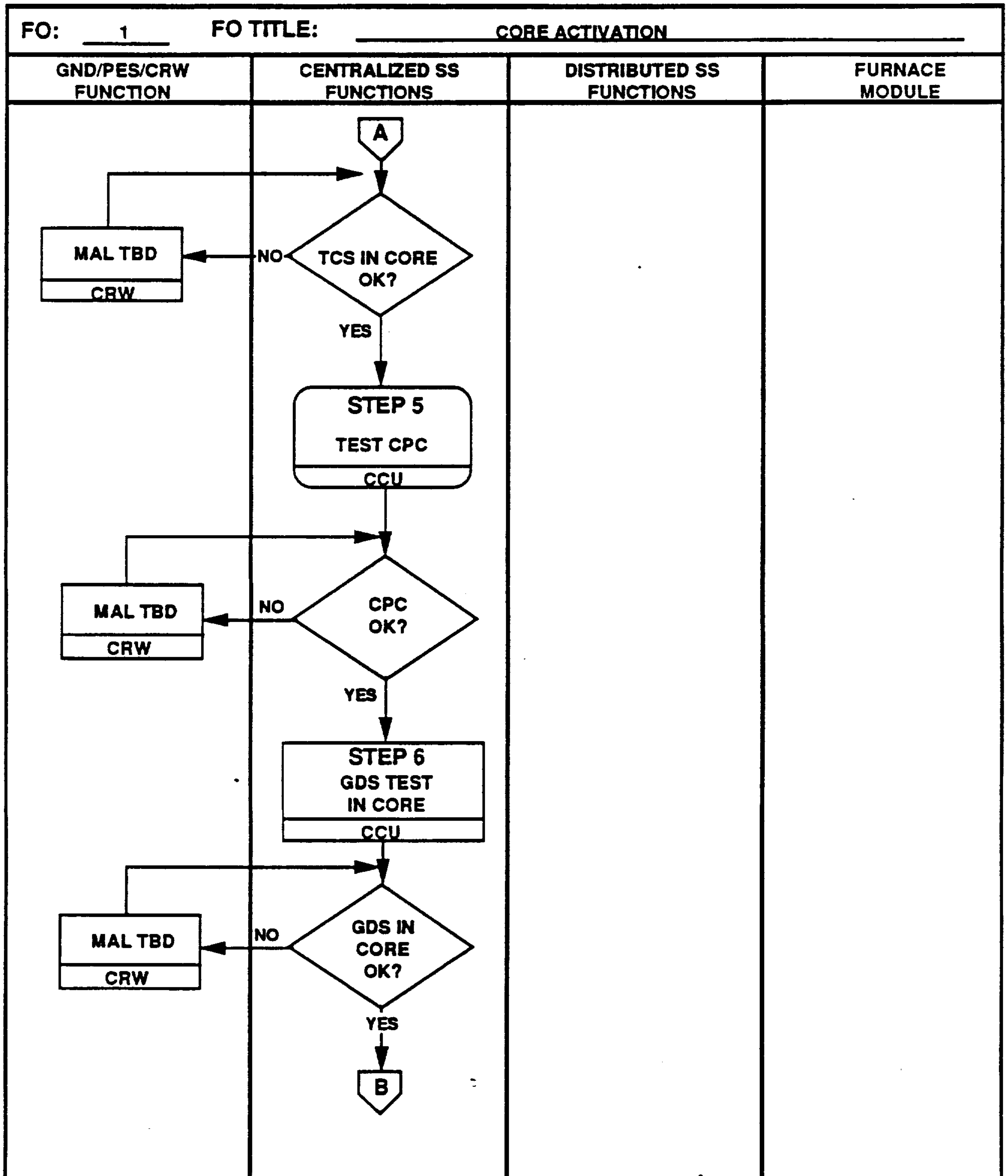


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 4 of 19)

FO: 1 FO TITLE: CORE ACTIVATION

| GND/PES/CRW FUNCTION | CENTRALIZED SS FUNCTIONS | DISTRIBUTED SS FUNCTIONS | FURNACE MODULE |
|---|---|---|---|

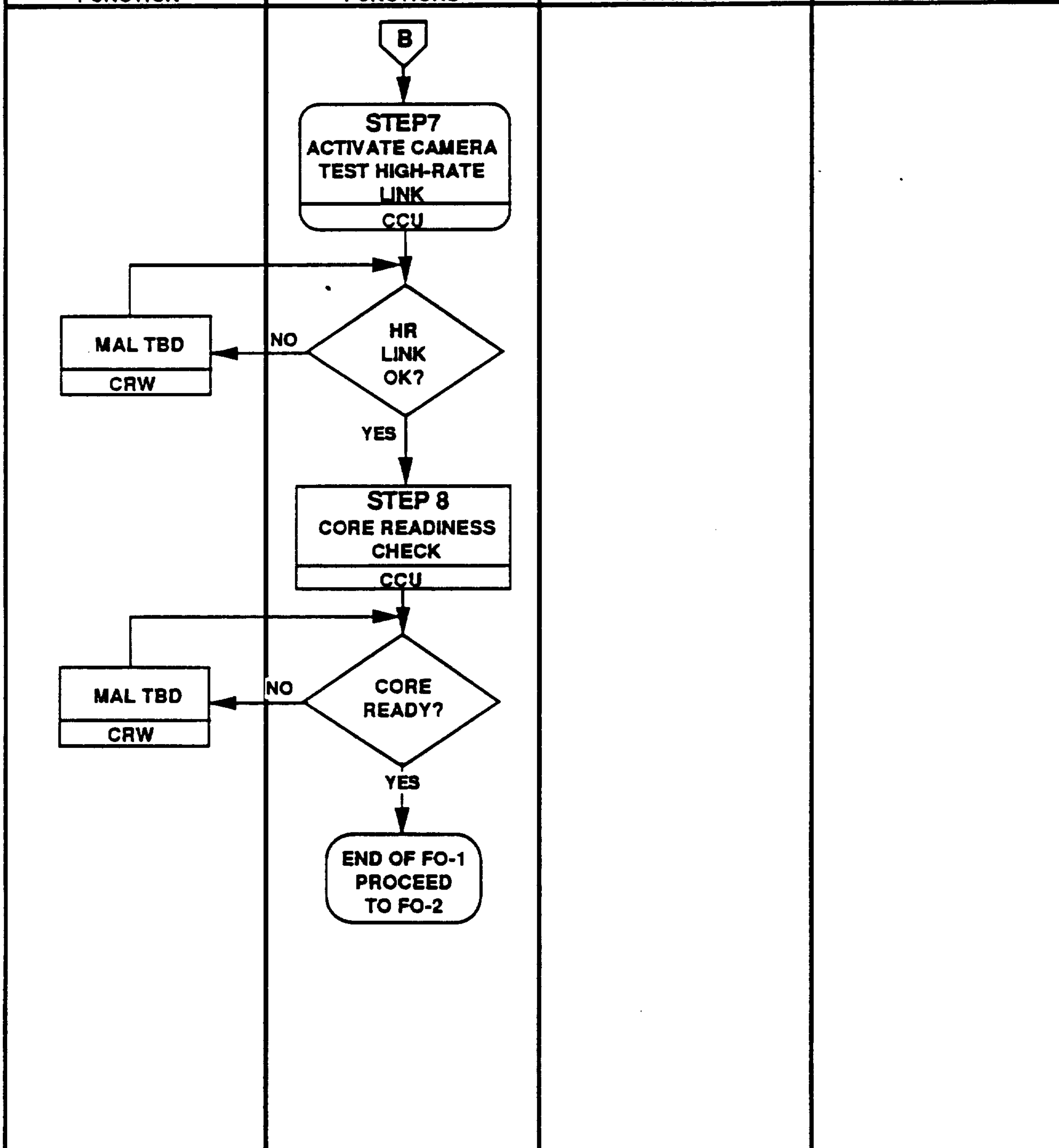


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 5 of 19)

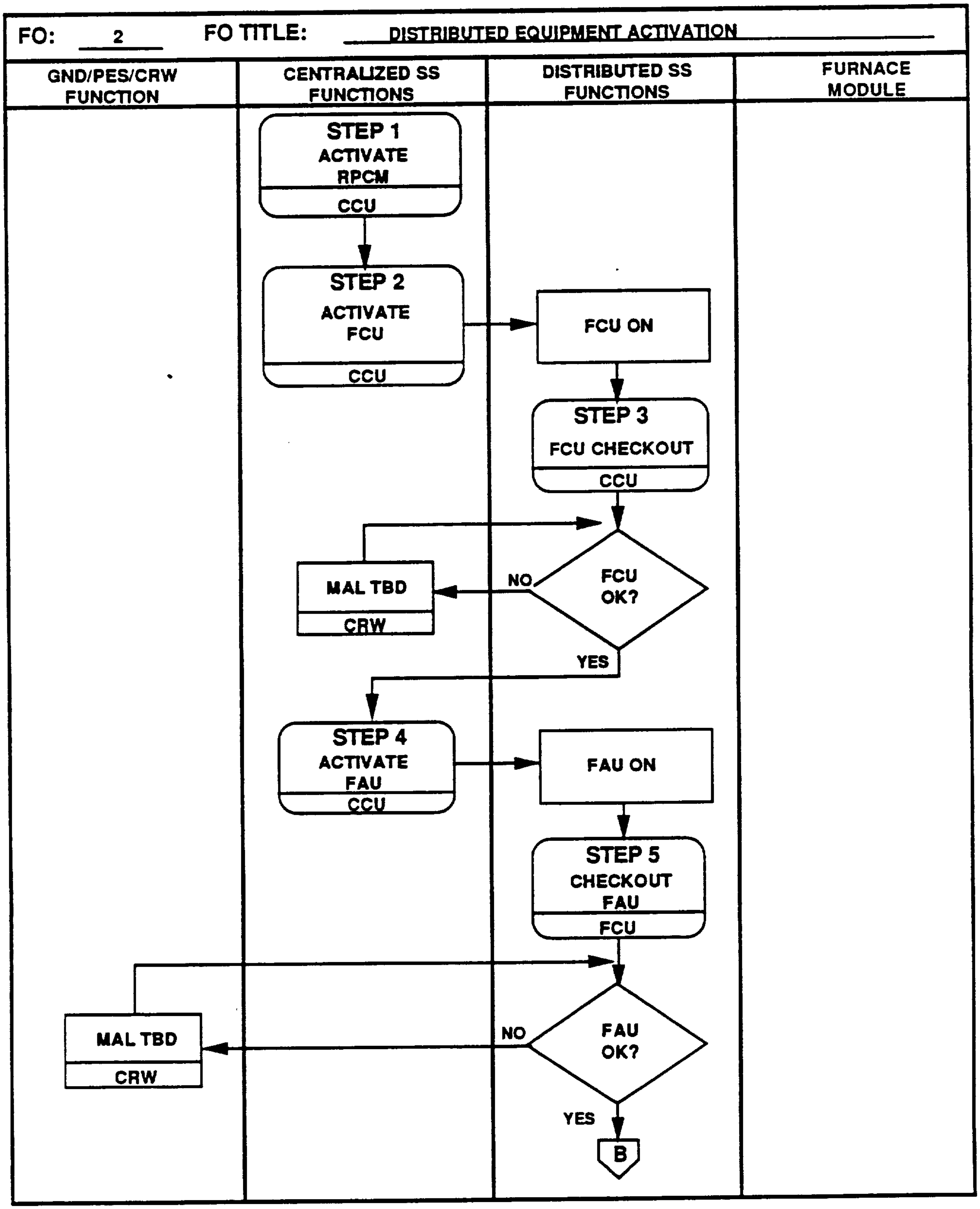


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 6 of 19)

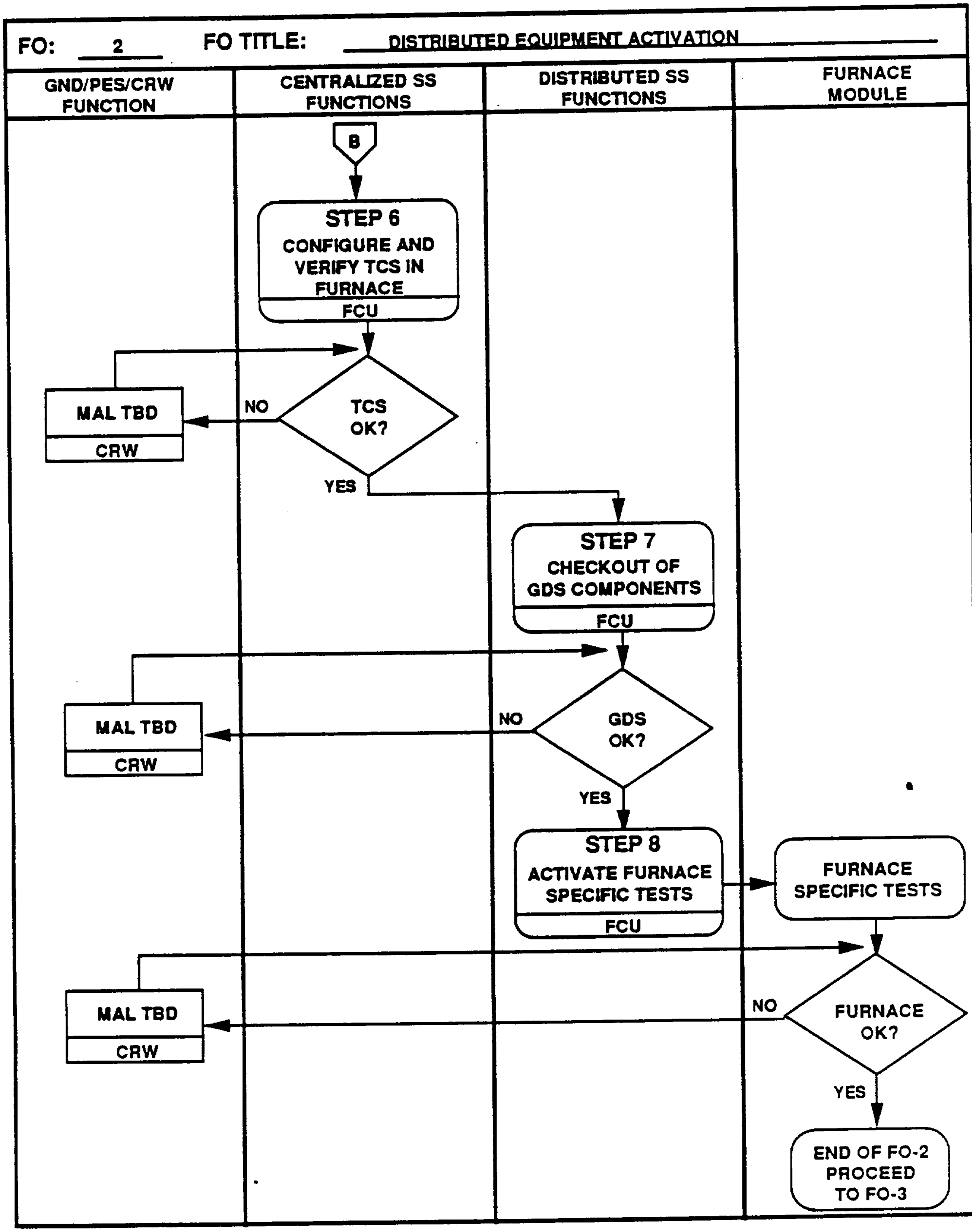


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 7 of 19)

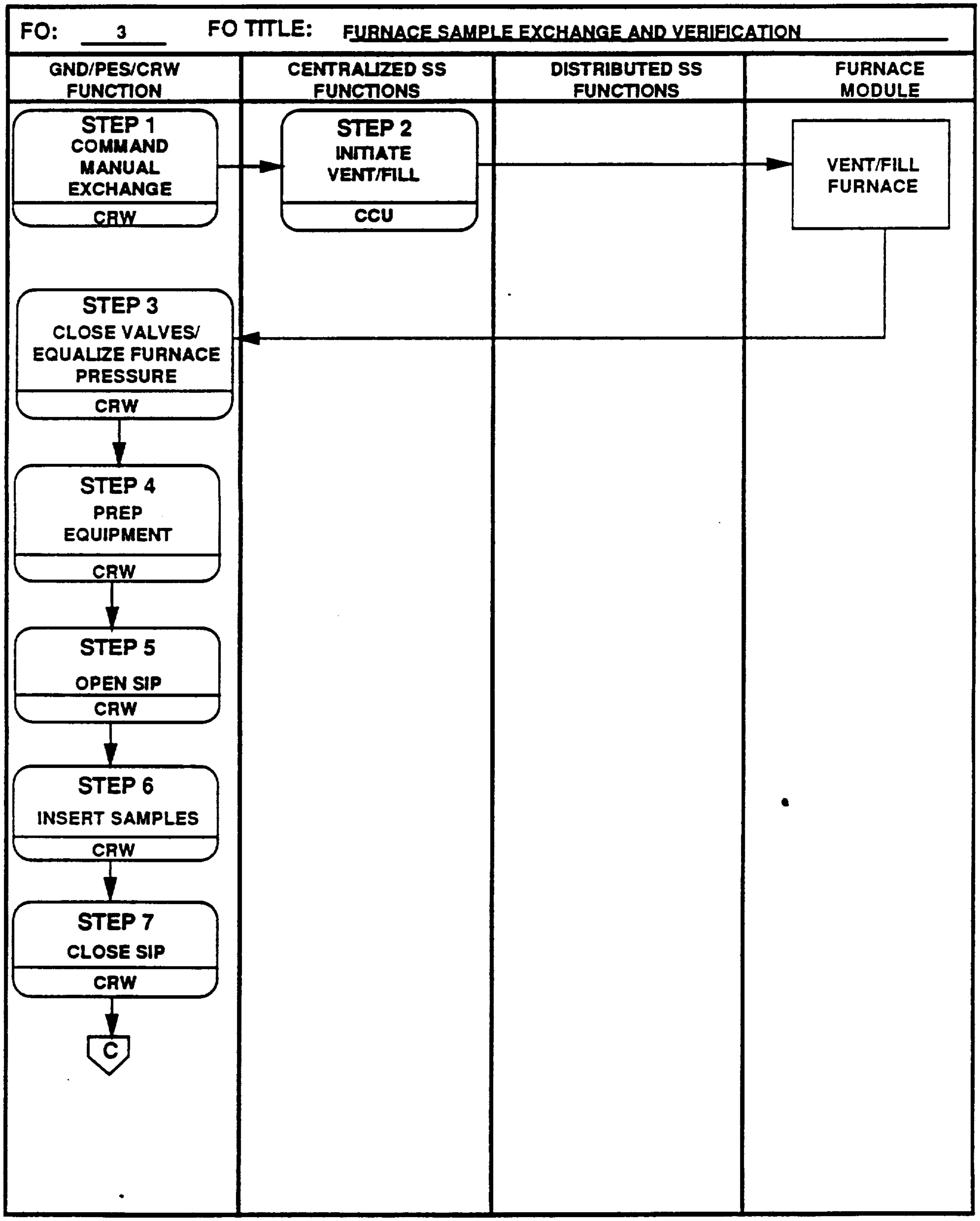


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 8 of 19)

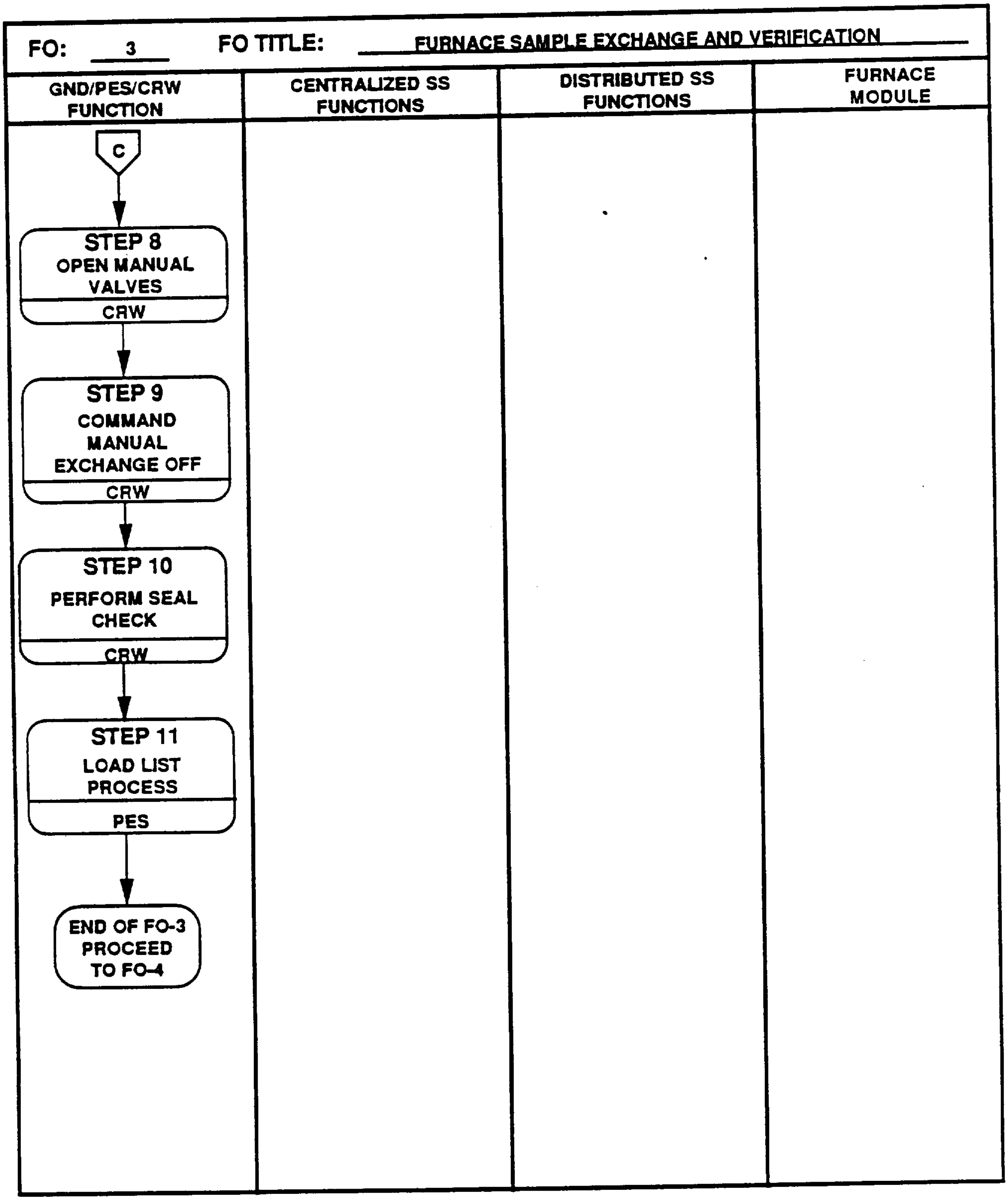


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 9 of 19)

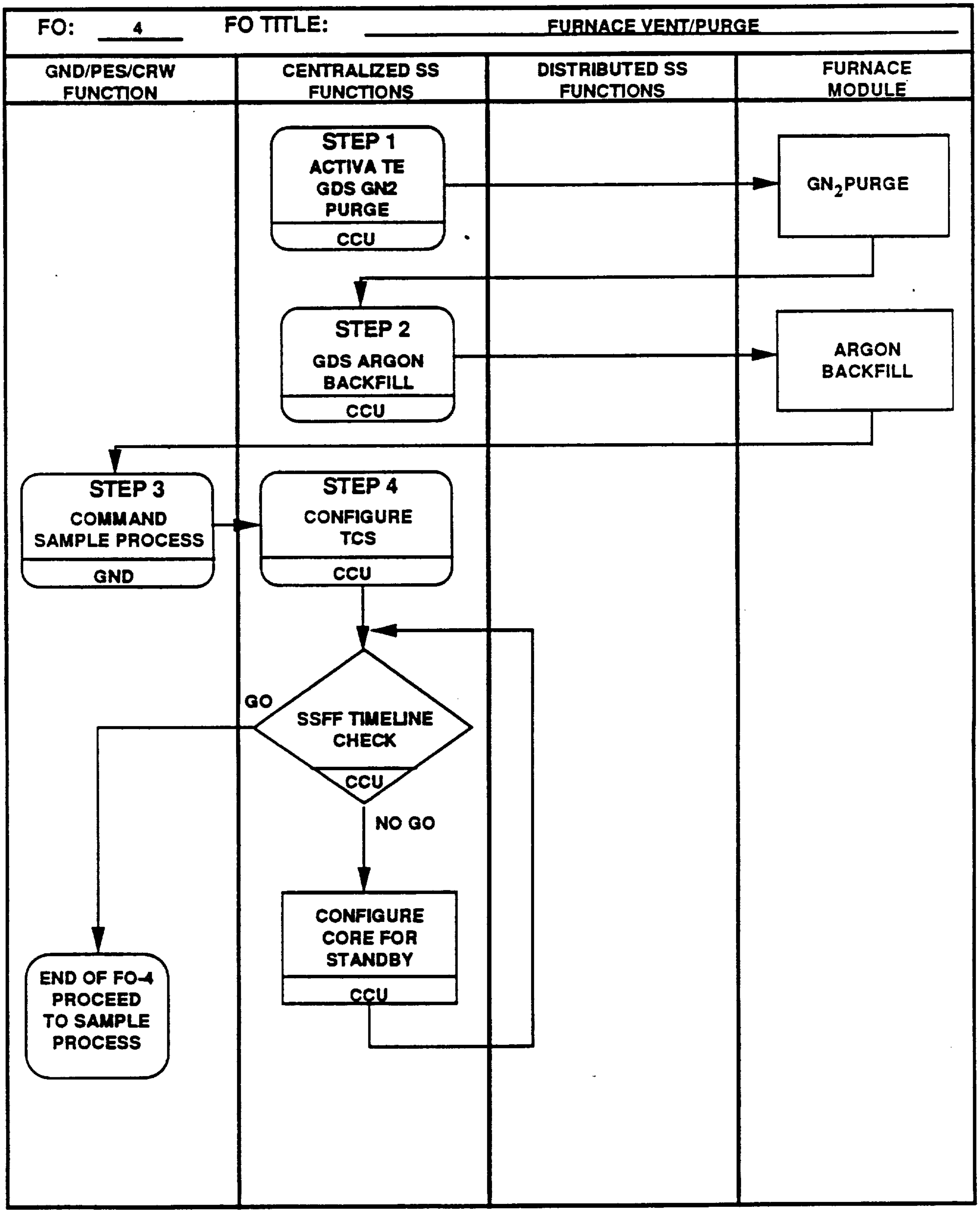


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 10 of 19)

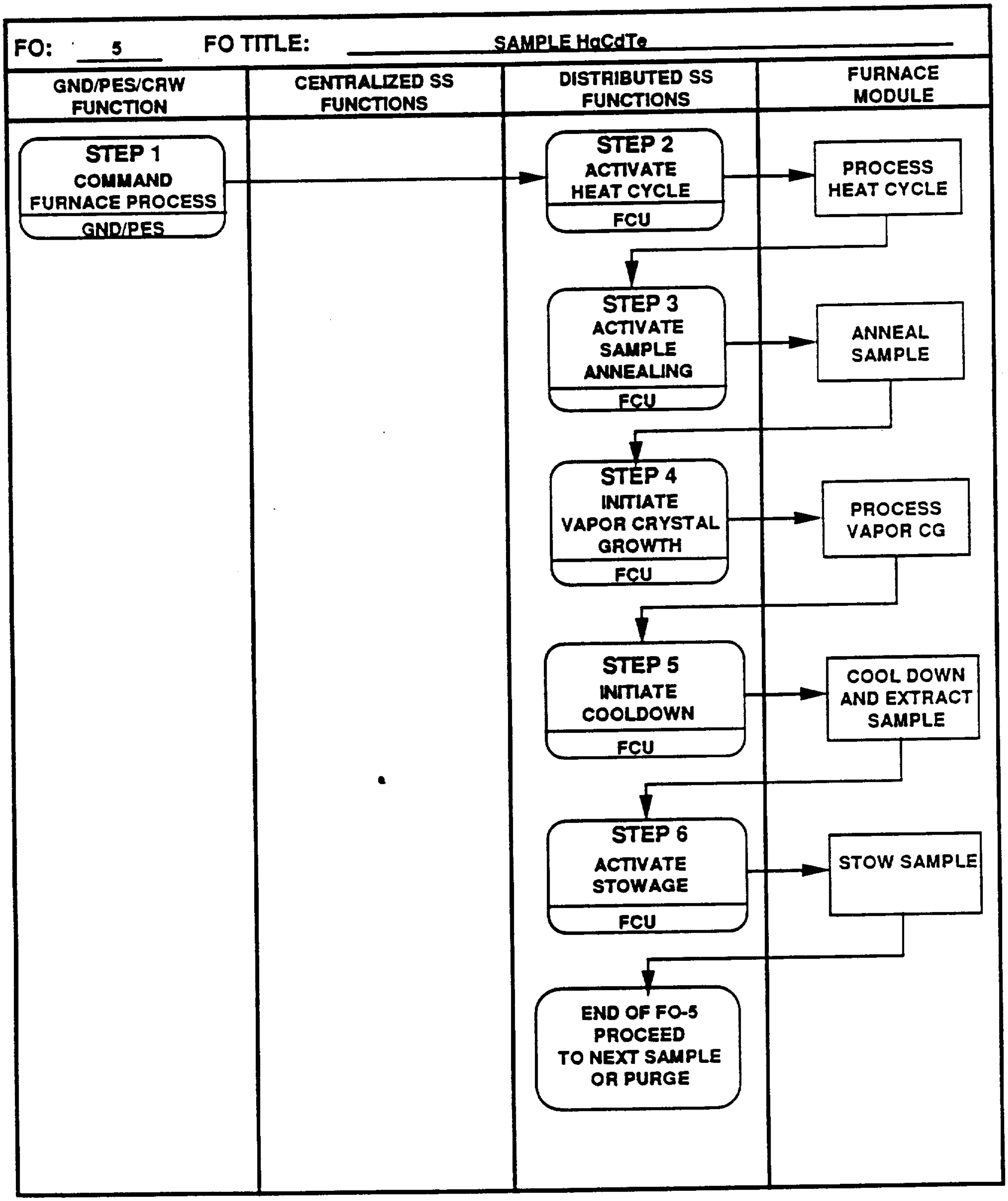


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 11 of 19)

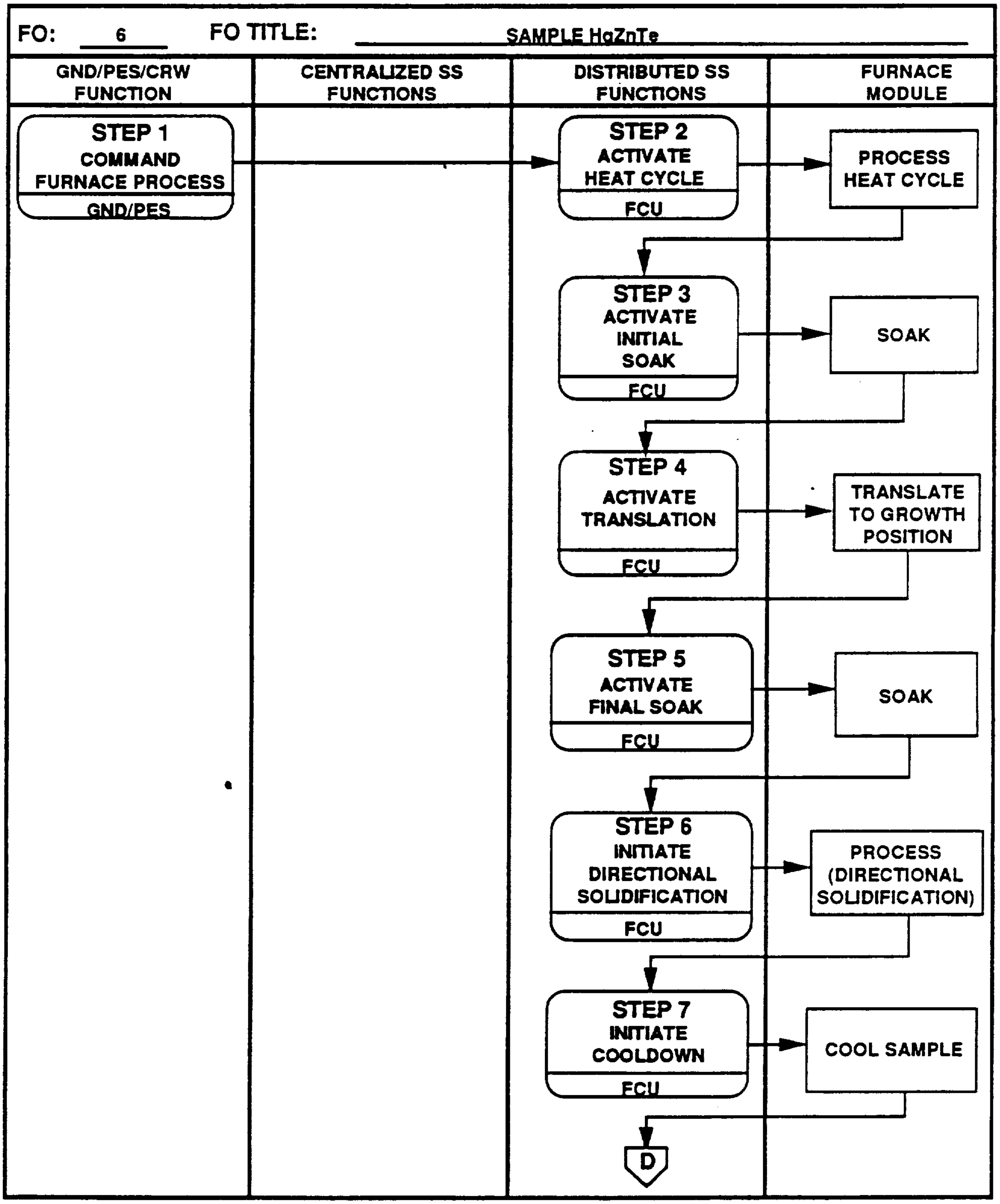


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 12 of 19)

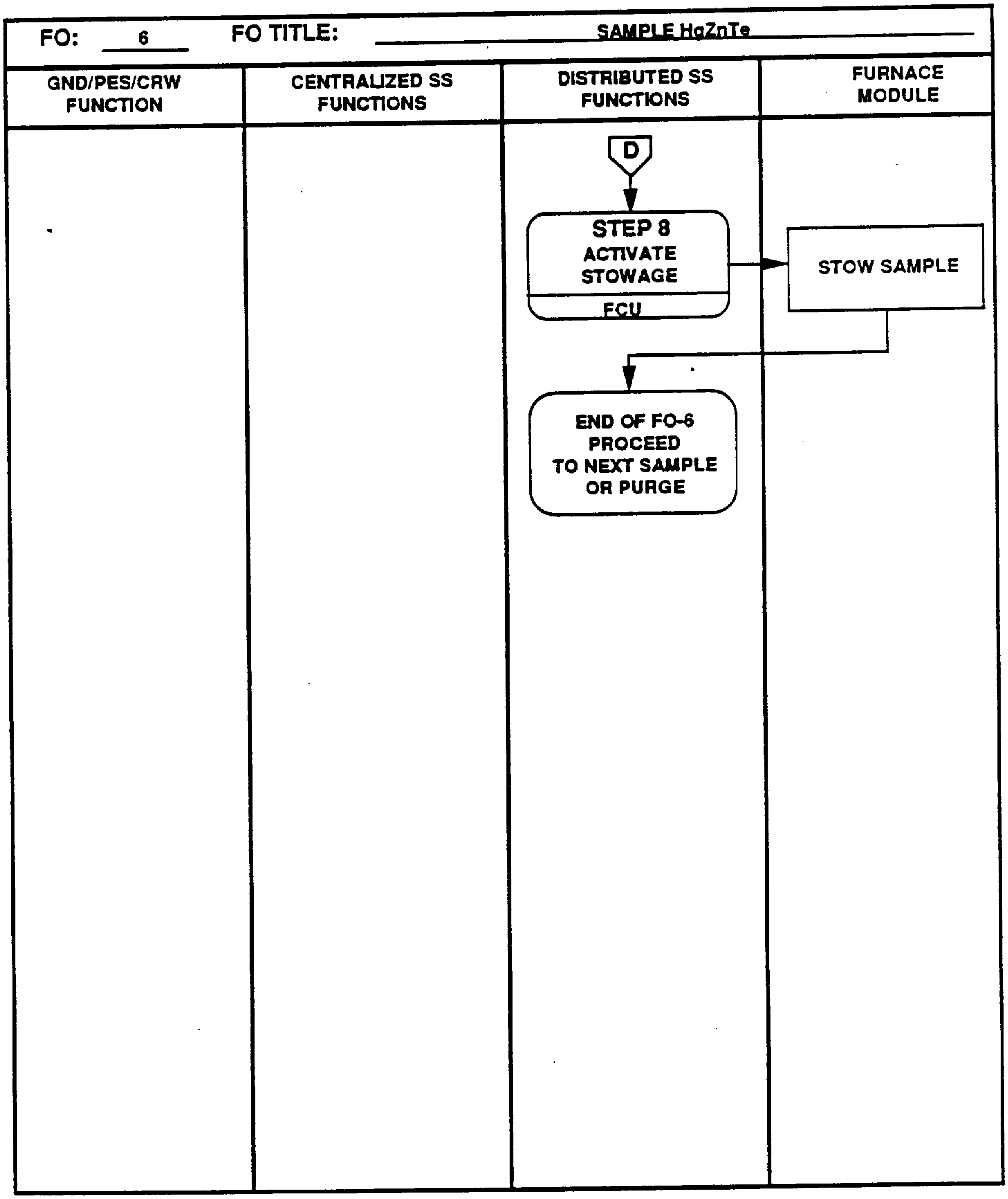


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 13 of 19)

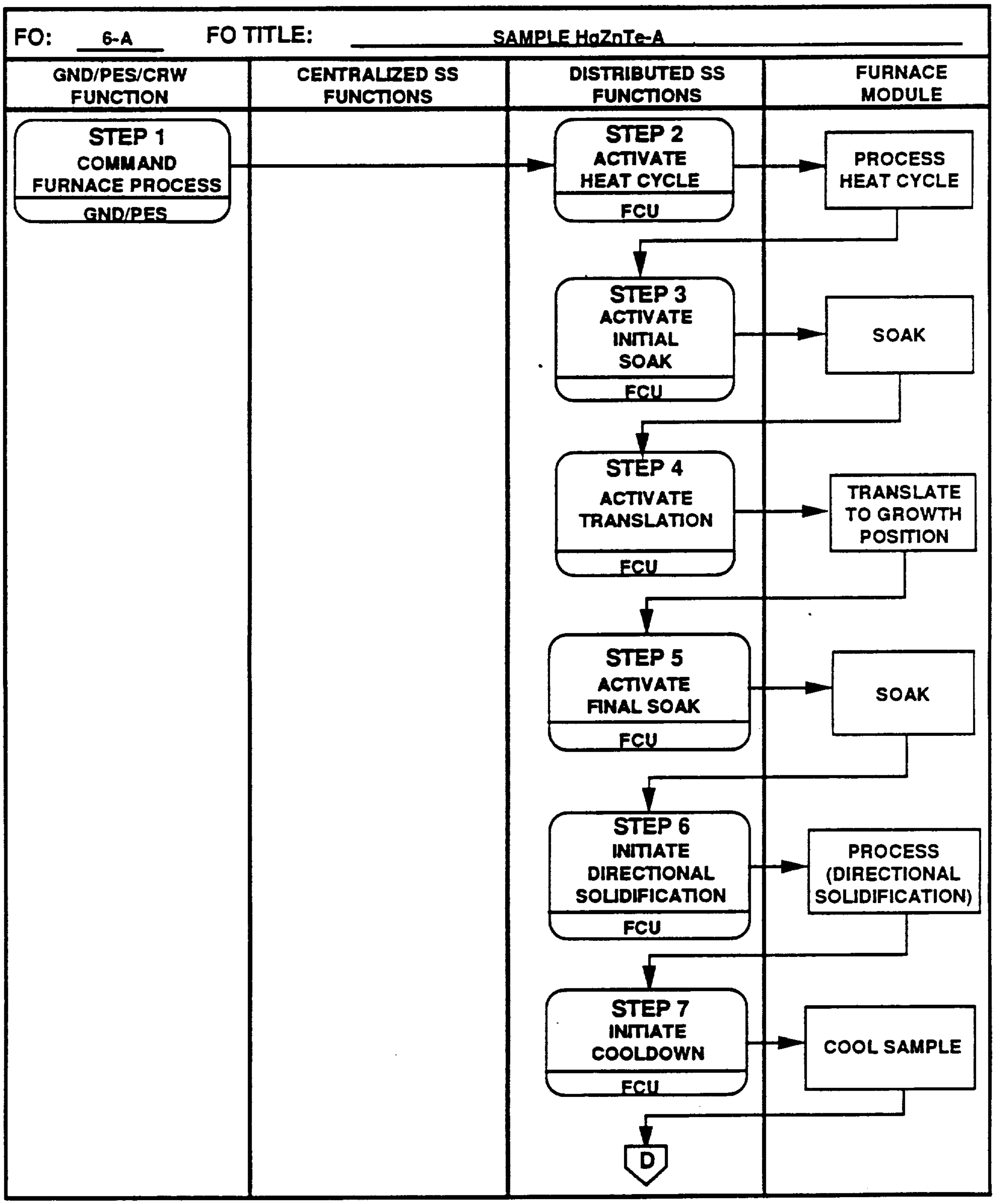


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 14 of 19)

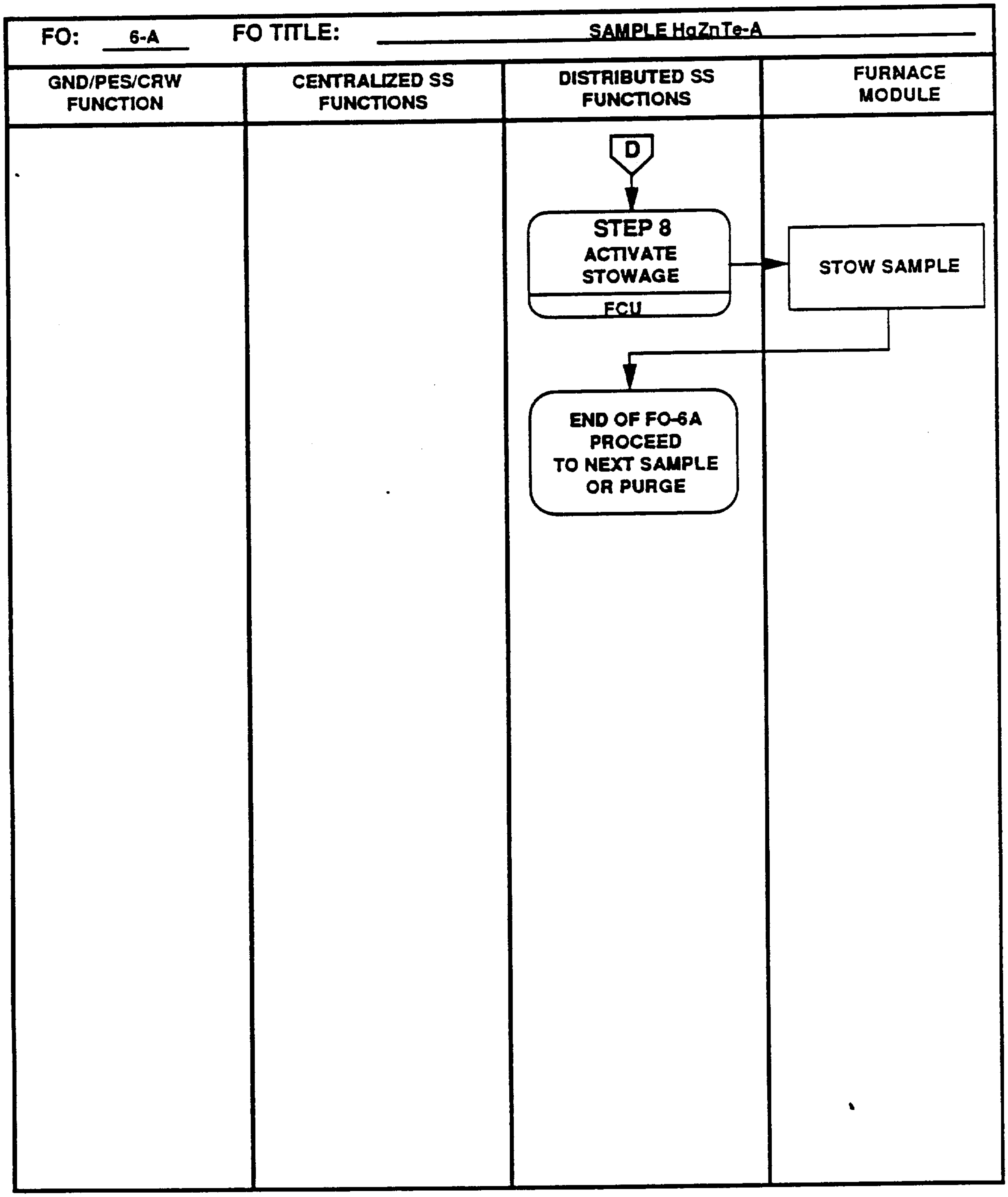


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 15 of 19)

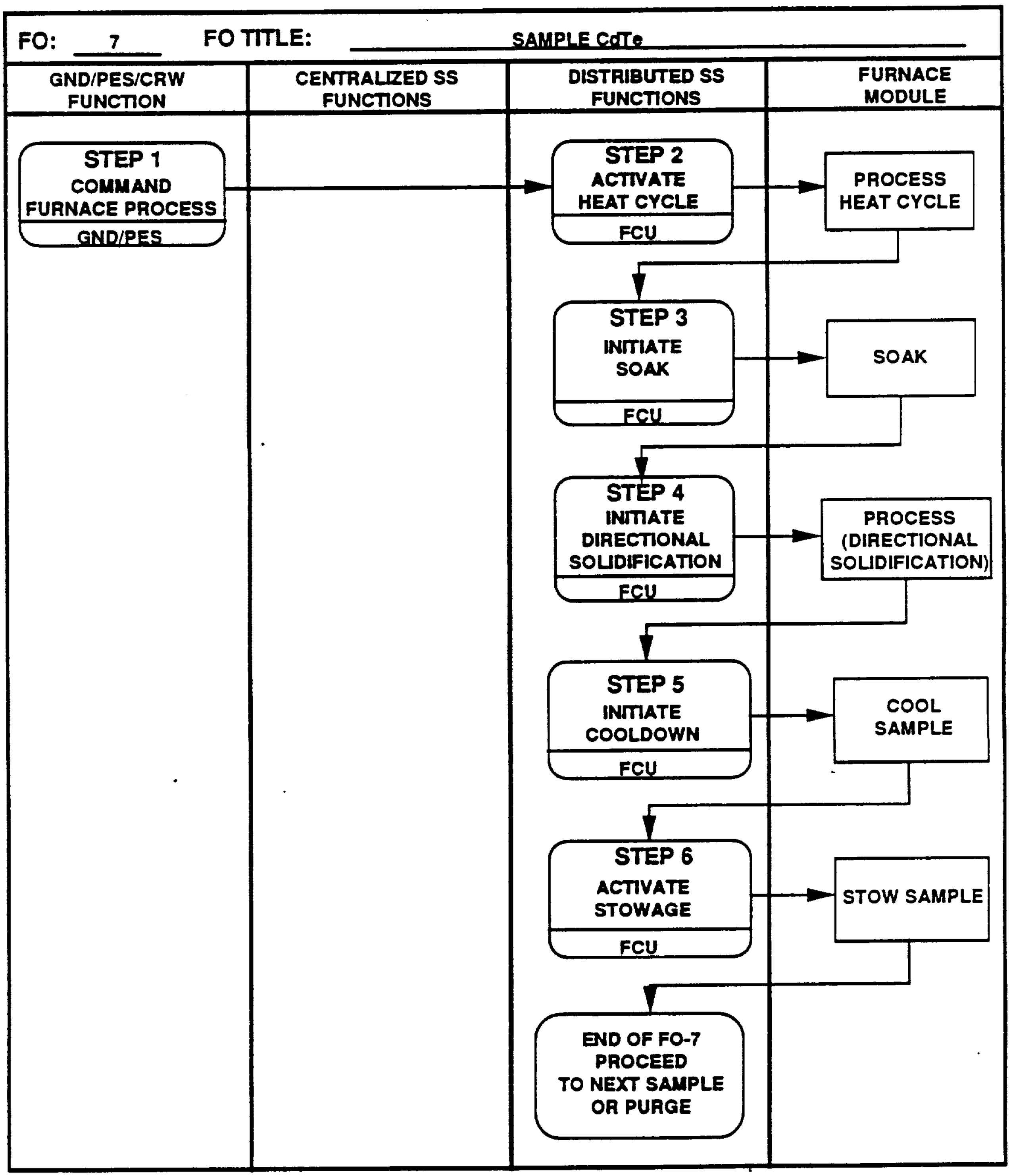


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 16 of 19)

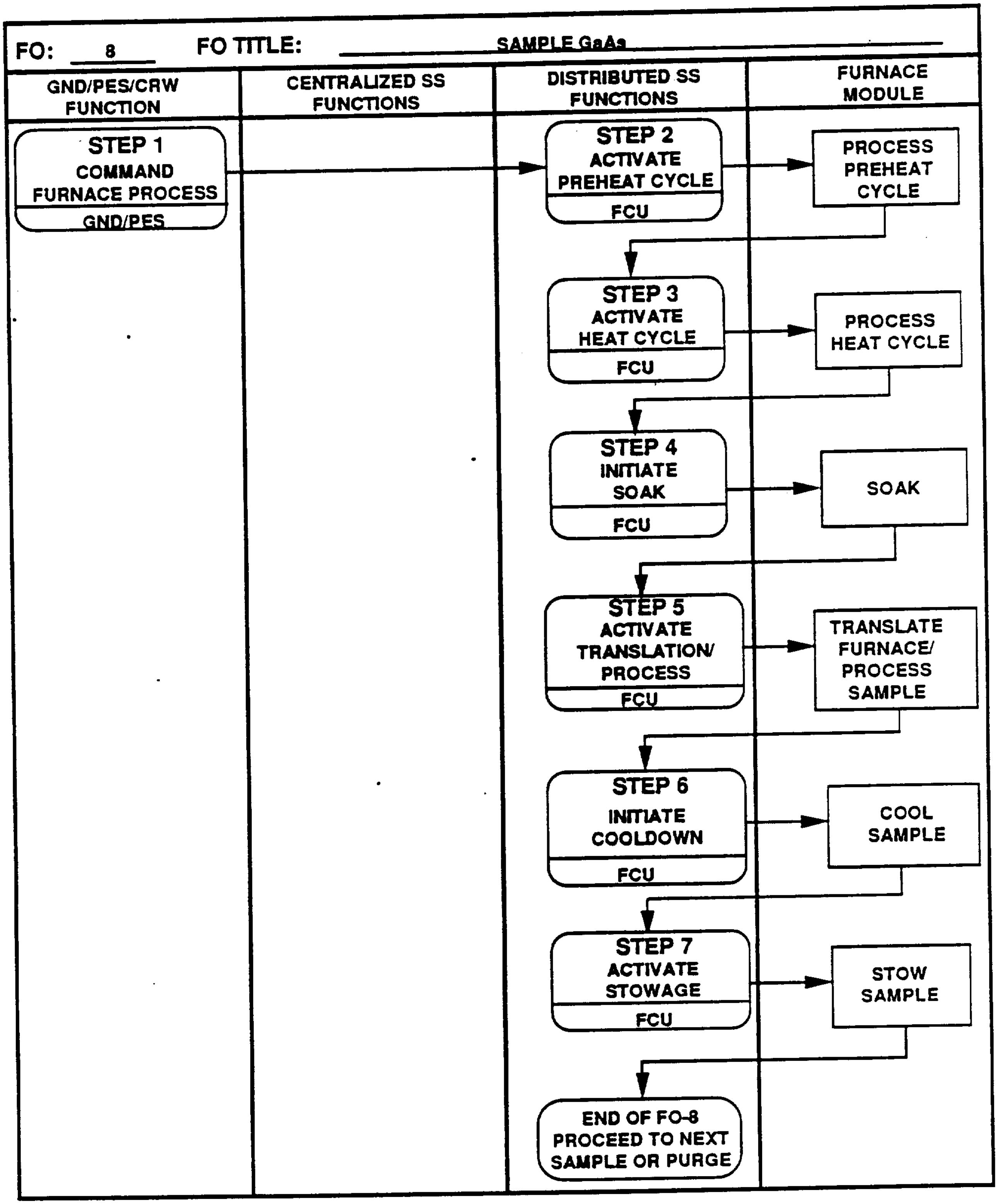


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 17 of 19)

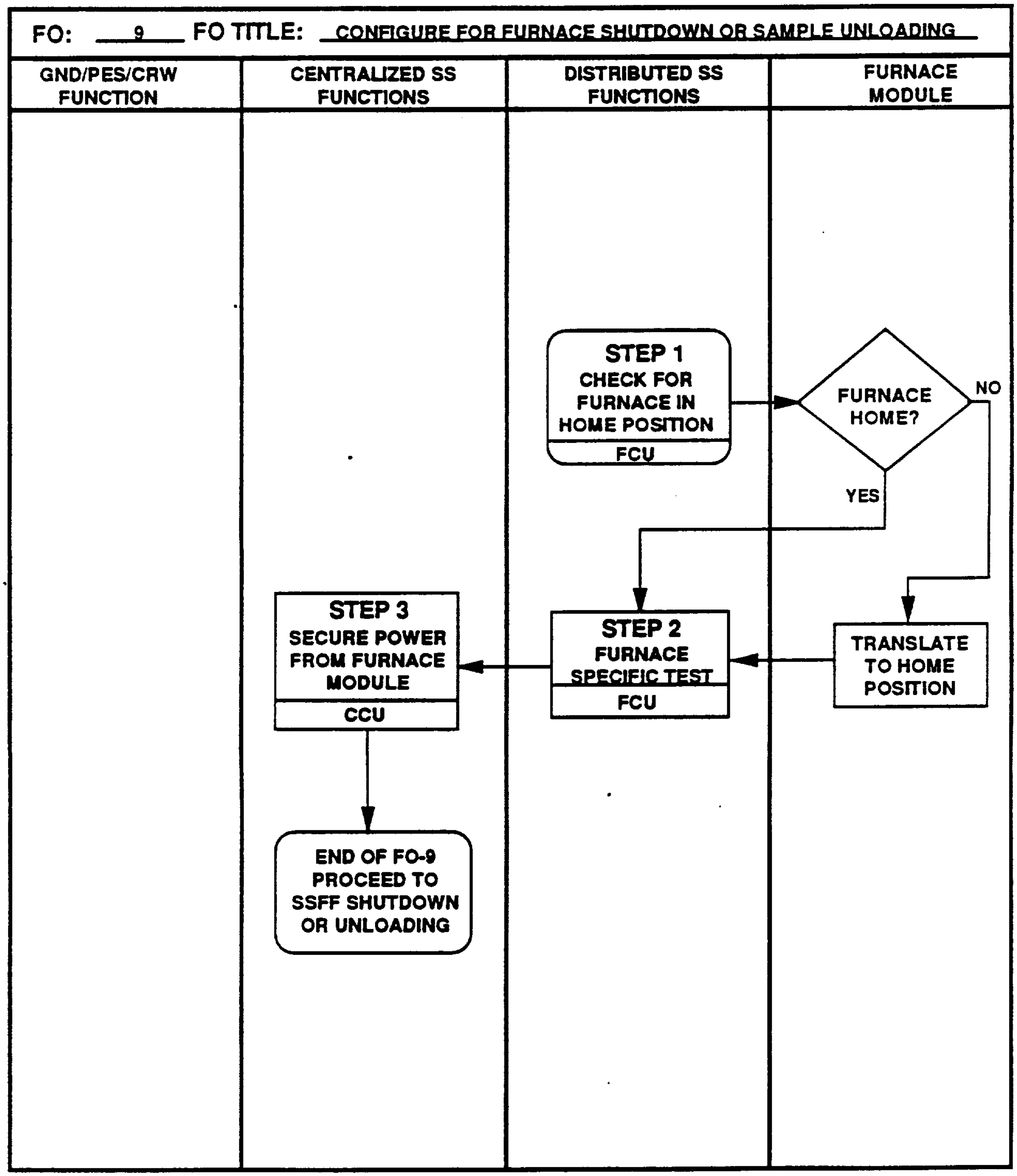


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 18 of 19)

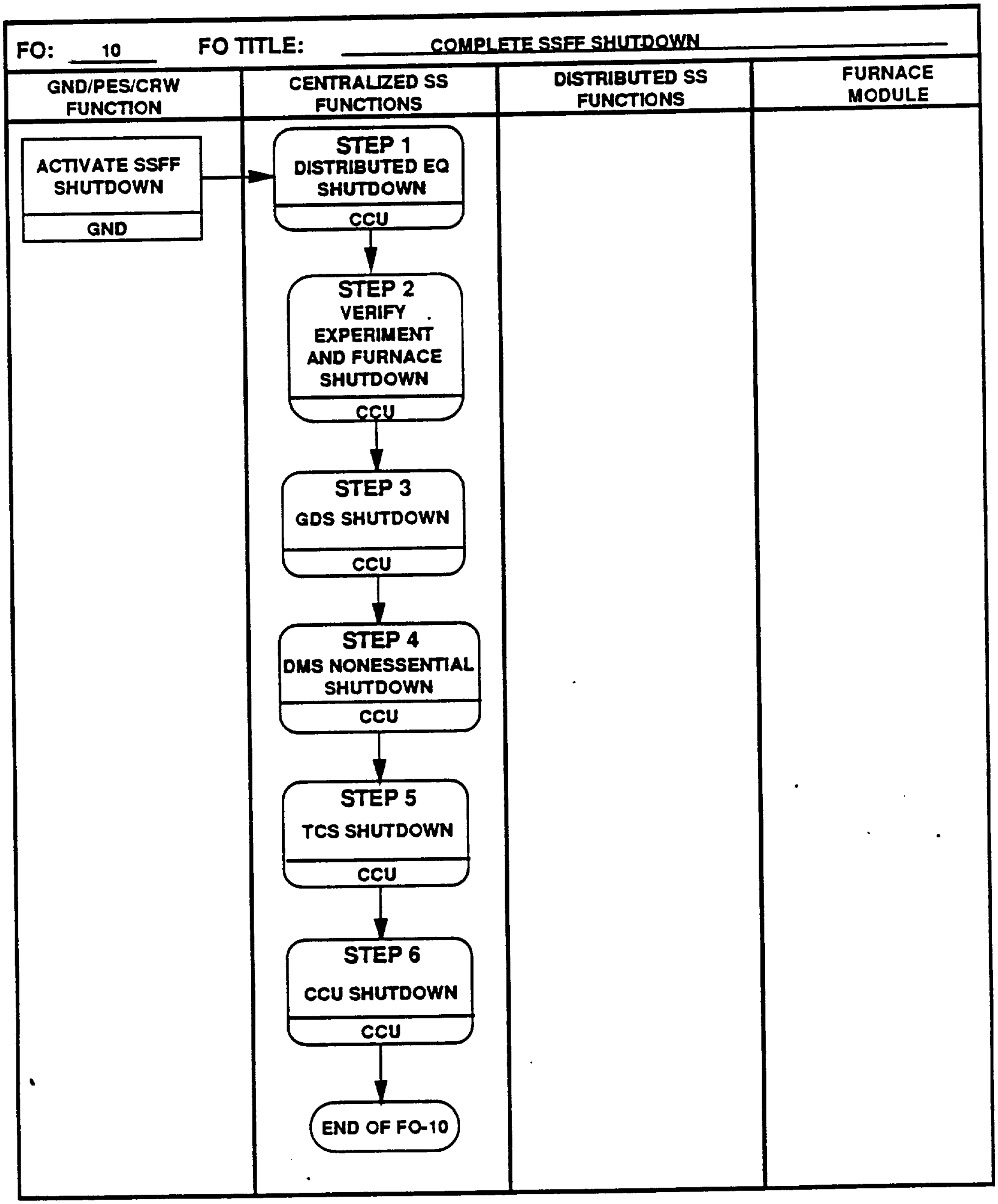
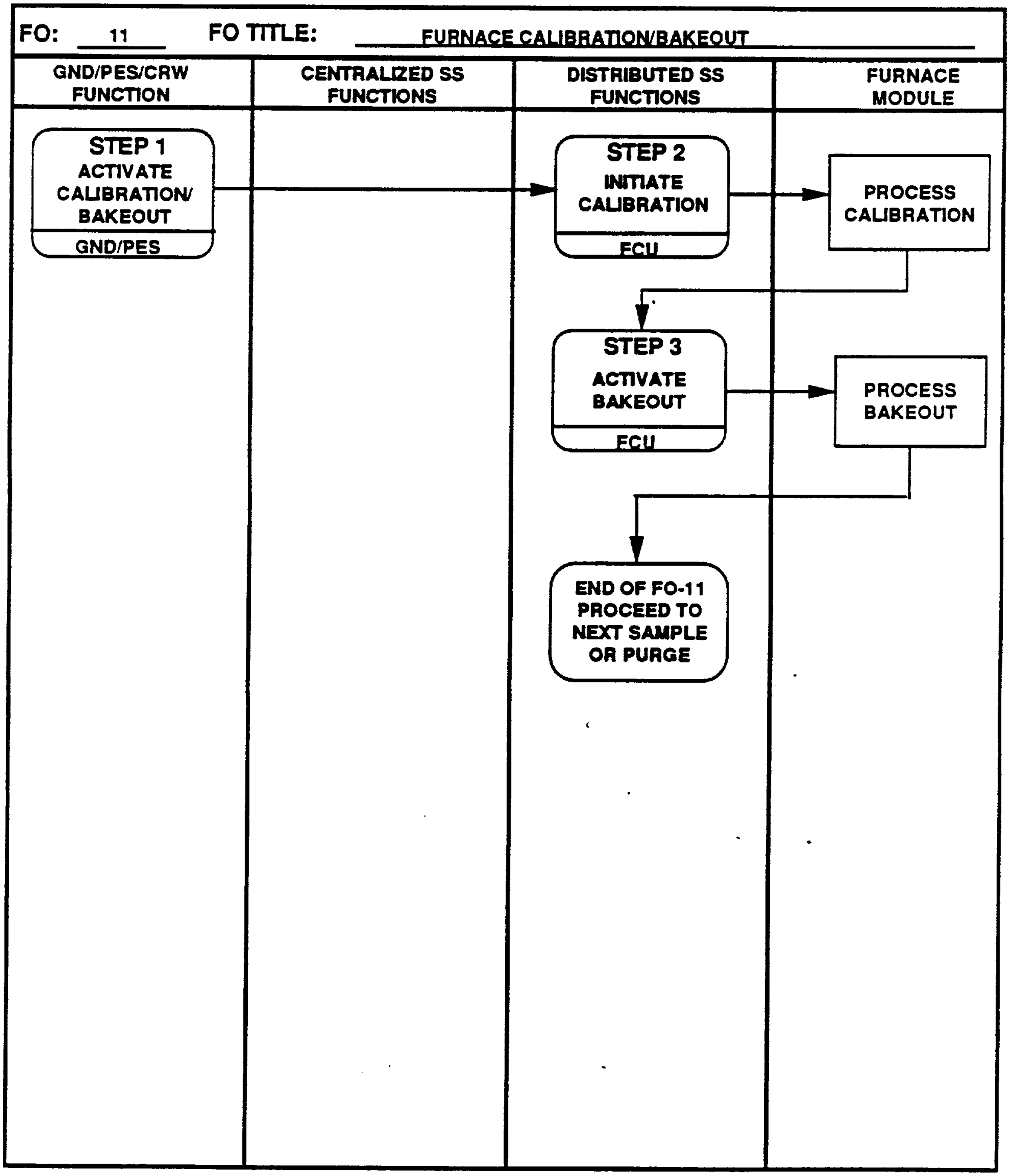


TABLE 1.1-3. SSFF OPERATIONAL FUNCTIONAL FLOW (Sheet 19 of 19)



## 1.2. STRUCTURAL/MECHANICAL

The Integrated Configuration-1 (IC1) Space Station Furnace Facility (SSFF) will be mounted in the U. S. Laboratory (USL) Module-A. The SSFF Core Rack will be mounted in a double rack location, and Experiment Rack-1 will be mounted in an adjacent double rack location. Figure 1.2-1 shows the SSFF system interface with Space Station Freedom (SSF). The physical and functional interfaces defined herein between SSFF and the USL are as follows:

- SSF-to-SSFF Mechanical Structures Subsystem (MSS) Physical Interfaces:
  - SSFF Core Rack to USL Module-A
  - SSFF Experiment Rack-1 to USL Module-A
  - SSFF Interconnect Tray Assembly to USL Module-A
- SSF-to-SSFF Core Rack Services Functional Interfaces:
  - SSF Electrical Power System (EPS) to SSFF Core Rack
  - SSF Data Management Subsystem (DMS) to SSFF Core Rack
  - SSF Thermal Control Subsystem (TCS) to SSFF Core Rack
  - SSF Vacuum Exhaust System (VES) to SSFF Core Rack
  - SSF Liquid Nitrogen System (LNS) to SSFF Core Rack
  - SSF avionics air to SSFF Core Rack
  - SSF fire detection and suppression to SSFF Core Rack
- SSF-to-SSFF Experiment Rack-1 Services Functional Interfaces:
  - SSF avionics air to SSFF Experiment Rack-1
  - SSF fire detection and suppression to SSFF Experiment Rack-1
- Crew Interface

### 1.2.1 EQUIPMENT LIST AND MASS PROPERTIES

Mass properties of the SSFF are shown in Table 1.2-1. Stowage items and their properties are shown in Table 1.2-2.

### 1.2.2 INTERFACE DETAIL

#### 1.2.2.1 SSF-to-SSFF MSS Interface

The SSFF MSS will interface with SSF by physical connections of the Core Rack, Experiment Rack-1, and the MSS Interconnect Tray Assembly. The Core Rack and Experiment Rack-1 are rack replacement structures modified from an International Standard Payload Rack (ISPR), and they attach to the USL at the ISPR pivot points and attach fitting locations. Figure 1.2-2 shows the Core Rack interface with SSF, and Figure 1.2-3 shows the Experiment Rack-1 interface with SSF. Figure 1.2-4 shows the Interconnect Tray Assembly, which provides support for the cabling and plumbing between the Core Rack and Experiment Rack-1. The Interconnect Tray Assembly attaches to the USL in the standoff.

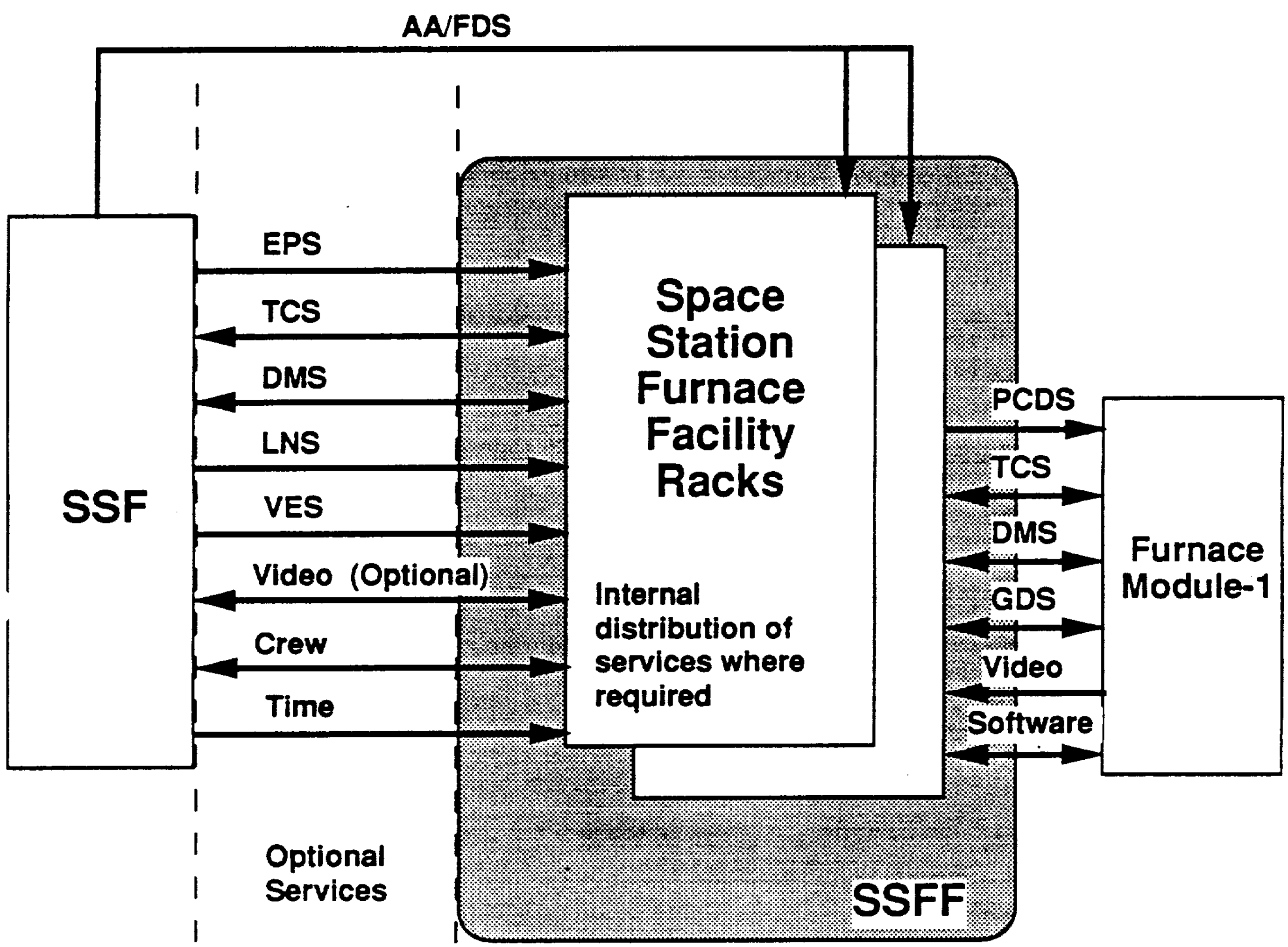



FIGURE 1.2-1. SSFF TO SSF RESOURCE INTERFACES

TABLE 1.2-1. LIST OF EQUIPMENT PROPERTIES (Sheet 1 of 5)

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| **GAS DISTRIBUTION SUBSYSTEM:** | | | | | | | | | | | | | | |
| Centralized Equipment: | | | | | | | | | | | | | | |
| Argon+bottle (1) | 17.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Latching Sol. Valves (4) | 4.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Manual Valves, 1/4" (4) | 0.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Manual Valve, 1" (1) | 2.4 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Regulators (2) | 1.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Filter, 1/4" (2) | 0.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pressure Sensors (3) | 0.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pressure Gauge (1) | 0.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Contamin. Monitor (1) | 18.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Check Valve, 1/4" (4) | 0.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| QD (with cap), 1/4" (4) | 0.4 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| QD (with cap), 1" (2) | 3.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Plumbing/hose/fittings | 6.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Distributed Equipment: | | | | | | | | | | | | | | |
| Latch. Sol Valve (6) | 6.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Press. Relief Valves (2) | 0.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Filter, 1" (1) | 3.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Compressor (1) | 15.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Storage Tank (1) | 17.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Accumulator (1) | 8.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Check Valves (2) | 0.4 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| CM Sensor (2) | 6.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pressure Sensors (3) | 0.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| QD (with cap), 1/4" (1) | 0.1 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| QD (with cap), 1" (1) | 1.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Check Valve, 1/4" (1) | 0.1 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Plumbing/hose/fittings | 1.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 1.2-1. LIST OF EQUIPMENT PROPERTIES (Sheet 2 of 5)

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| **DATA MANAGE-MENT SUBSYSTEM** | | | | | | | | | | | | | | |
| Centralized Equipment: | | | | | | | | | | | | | | |
| Core Control Unit (1) | 29.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Hard Drive (1) | 22.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| CDROM/WORM (1) | 7.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| High-Density Recorder (1) | 57.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Core Monitor & Control Unit (1) | 20.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Crew Interface (1) | 23.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| CPCS (2) | 36.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Cabling (AR) | 20.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Distributed Equipment: | | | | | | | | | | | | | | |
| Furnace Control Unit (1) | 43.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Furnace Actuator Unit (1) | 29.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| DCMU (1) | 20.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Cabling (AR) | 6.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| **POWER CONDITION-ING AND DISTRIB. SUBSYSTEM** | | | | | | | | | | | | | | |
| Centralized Equipment: | | | | | | | | | | | | | | |
| Core Power Distrib. (1) | 42.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Core Pwr Conditioner (1) | 47.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Core Junction Box-A (1) | 4.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Core Junction Box-B (1) | 4.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 1.2-1. LIST OF EQUIPMENT PROPERTIES (Sheet 3 of 5)

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| **POWER CONDITIONING AND DISTRIB. SUBSYSTEM** (Cont.) | | | | | | | | | | | | | | |
| Centralized Equip. (cont.) | | | | | | | | | | | | | | |
| Essentials Pwr Supp. (1) | 3.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Volt./Current Sensors (4) | 2.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Line and Connectors | 11.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Distributed Equipment: | | | | | | | | | | | | | | |
| Current Pulsing Equipment (1) | 13.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Furnace Pwr. Dist. (1) | 7.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Furnace Junction Box (1) | 9.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Essentials Pwr Supp. (1) | 4.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Volt./Current Sens. (66) | 33.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Line and Connectors | 3.4 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| **THERMAL CONTROL SUBSYSTEM** | | | | | | | | | | | | | | |
| Centralized Equipment: | | | | | | | | | | | | | | |
| Heat Exchanger (1) | 13.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pump Package (1) | 15.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Flow Meters (2) | 1.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Flow Control Valves (2) | 3.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Temperature Sensors (5) | 0.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pressure Transducers (3) | 1.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Custom Coldplates (4) | 24.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| -5 Coldplates (2) | 3.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 2-1. List of Equipment Properties (Sheet 4 of 5)

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| **THERMAL CONTROL SUBSYSTEM** | | | | | | | | | | | | | | |
| Centralized Equip. (Cont.): | | | | | | | | | | | | | | |
| Pwr Mod CP-Upper (2) | 12.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pwr Mod CP-Lower (2) | 9.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Plumbing (25 m) | 13.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Quick Disconnects (37) | 3.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Check Valves (2) | 0.1 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Manual Valves (2) | 0.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Shutoff Valves (2) | 3.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Water | 10.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Distributed Equipment: | | | | | | | | | | | | | | |
| Modified -7 CPs (3) | 11.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Temperature Sensors (3) | 0.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Pressure Transducer (1) | 0.5 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Flow Meter (1) | 0.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Flow Control Valve (1) | 1.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Check Valve (1) | 0.1 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Manual Valve (1) | 0.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Shutoff Valve (1) | 1.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Plumbing (12 m) | 6.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Quick Disconnects (16) | 1.6 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Water | 7.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 1.2-1. LIST OF EQUIPMENT PROPERTIES (Sheet 5 of 5)

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| **MECHANICAL STRUCTURES SUBSYSTEM:** | | | | | | | | | | | | | | |
| Interconnect Tray | 72.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Centralized Equipment: | | | | | | | | | | | | | | |
| TCS | 22.9 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| PCDS | 31.8 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| GDS | 21.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| DMS | 56.2 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Distributed Equipment: Exp. Rack-1 MSS | 28.4 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| **Rack Replacement Structures:** | | | | | | | | | | | | | | |
| Core Rack | 92.3 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Experiment Rack-1 | 128.7 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| **Furnaces:** | | | | | | | | | | | | | | |
| Furnace Module-1 | 327.0 | 100 | 0 | 0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 1.2-2. STOWAGE LIST

| Item | Number Required | Mass Each (kg) | Dimensions (cm) LxWxH or LxDia | Stowage Responsiblity | | Stowage Phase | | | Special Requirements |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Ex | PL | L | O | R | |
| **TBD** | | | | | | | | | |

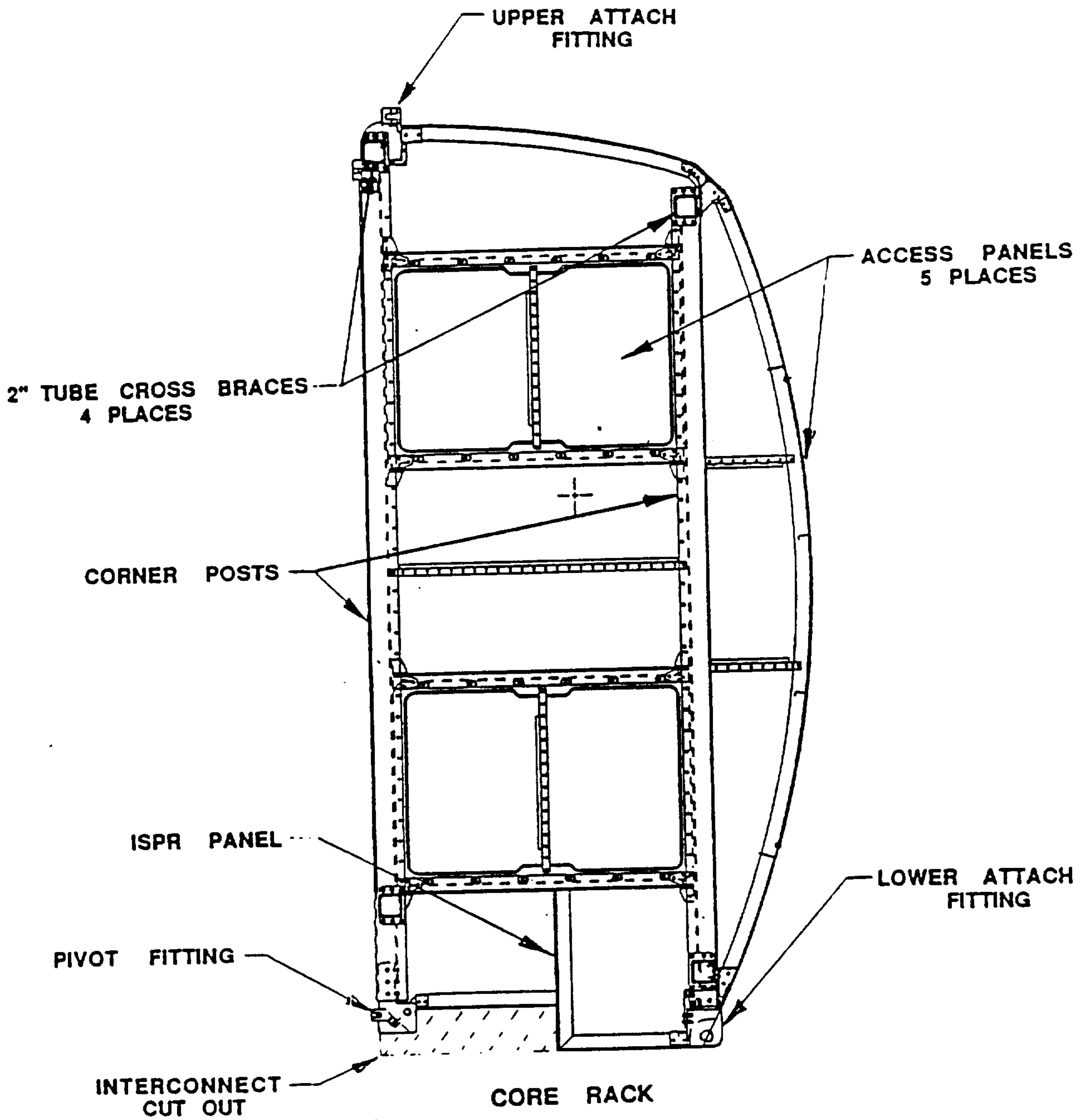



FIGURE 1.2-2. SSF TO SSFF CORE RACK PHYSICAL INTERFACE

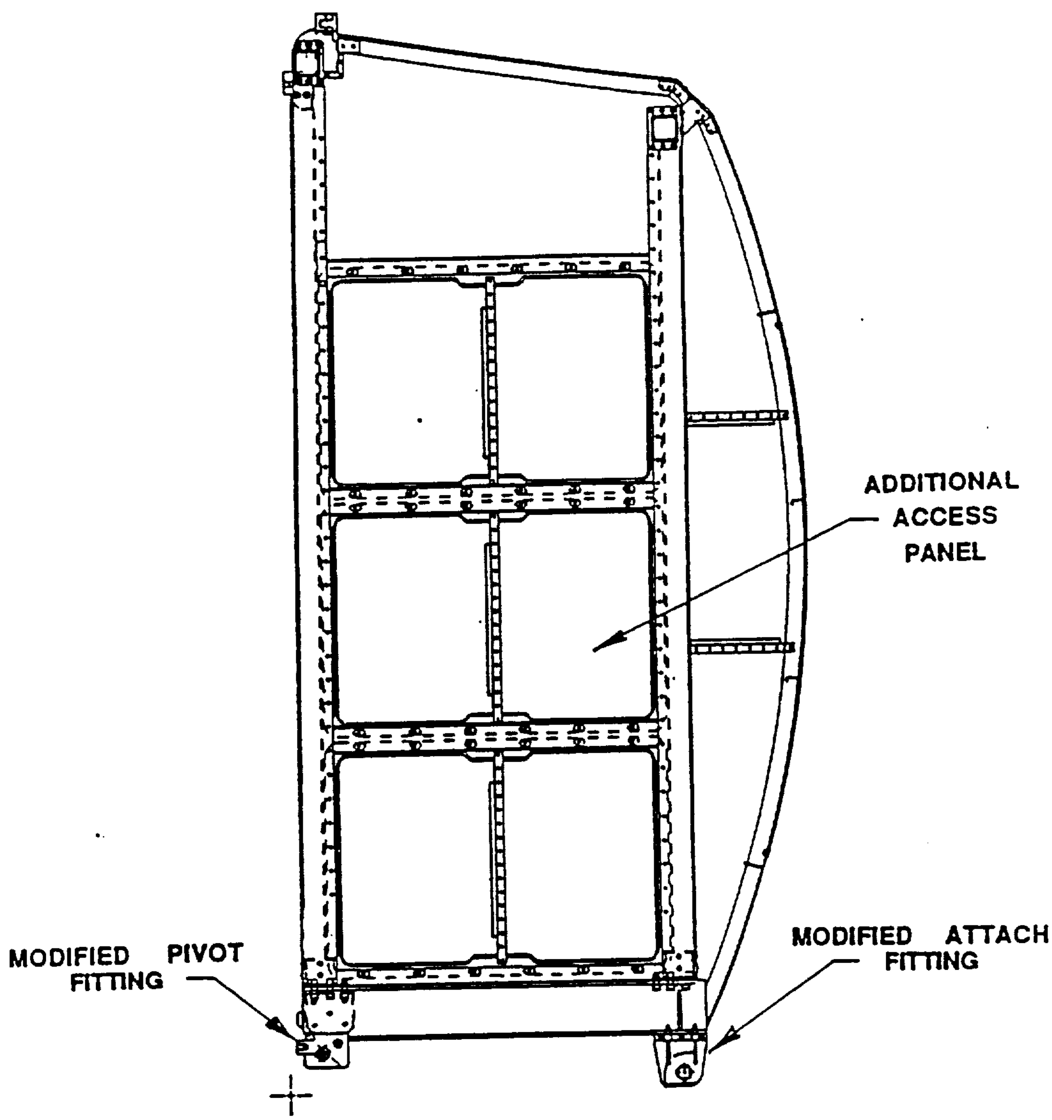



FIGURE 1.2-3. SSF TO SSFF EXPERIMENT RACK-1 PHYSICAL INTERFACE

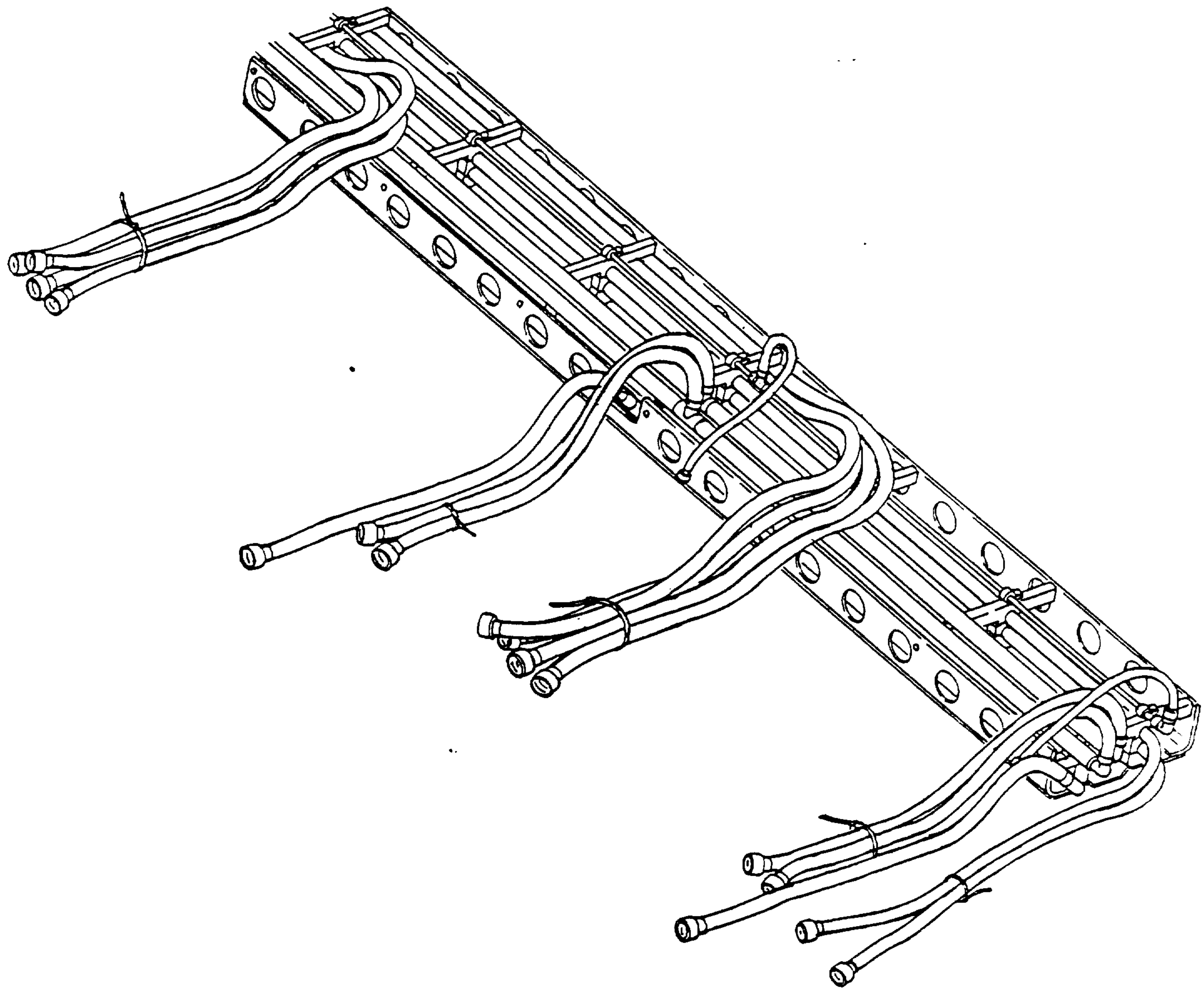


FIGURE 1.2-4. SSFF INTERCONNECT TRAY ASSEMBLY

1.2.2.2 SSF-to-SSFF Core Rack Interface

The SSFF will interface with SSF services in the standoff through an ISPR passthrough rack panel in the Core Rack. Figure 1.2-5 shows this Core Rack panel layout. SSFF subsystems receive the SSF services at the Core Rack, and then those services are routed out to Experiment Rack-1. All SSF services are provided at the Core Rack except avionics air and fire detection and suppression, which are provided at each rack location. Subsystem interfaces with SSF are described below.

1.2.2.2.1 SSF EPS-to-SSFF Core Rack - The SSFF Power Conditioning and Distribution Subsystem (PCDS) will interface with the SSF EPS by connecting to two 6-kW, 120-Vdc power buses in the Core Rack.

1.2.2.2.2 SSF DMS-to-SSFF Core Rack - The SSFF DMS will interface with the SSF DMS by connecting to the MIL-STD-1553 bus or the payload fiber distributed data interface (FDDI) at the Core Rack panel. The SSFF DMS will also require a high-rate data link (HRDL) interface at the Core Rack panel to accommodate transfer of high-rate data.

1.2.2.2.3 SSF TCS-to-SSFF Core Rack - The SSFF TCS will interface with the SSF TCS by connecting to the moderate temperature cooling loop with hoses from a payload rack heat exchanger behind the Core Rack panel.

1.2.2.2.4 SSF VES-to-SSFF Core Rack - The SSFF Gas Distribution Subsystem (GDS) will interface with the SSF VES by connecting a vacuum line at the Core Rack panel.

1.2.2.2.5 SSF LNS-to-SSFF Core Rack - The SSFF GDS will interface with the SSF LNS by connecting a nitrogen line at the Core Rack panel.

1.2.2.3 SSF-to-SSFF Experiment Rack-1 Interface

The only services provided directly from SSF to Experiment Rack-1 are avionics air and fire detection and suppression. The SSF will interface with SSFF Experiment Rack-1 at the furnace interface panel as shown in Figure 1.2-6. An SSFF-provided hose assembly will connect between this panel and the standoff interface service connection. All other Experiment Rack-1 services will be provided by the SSFF Core Rack.

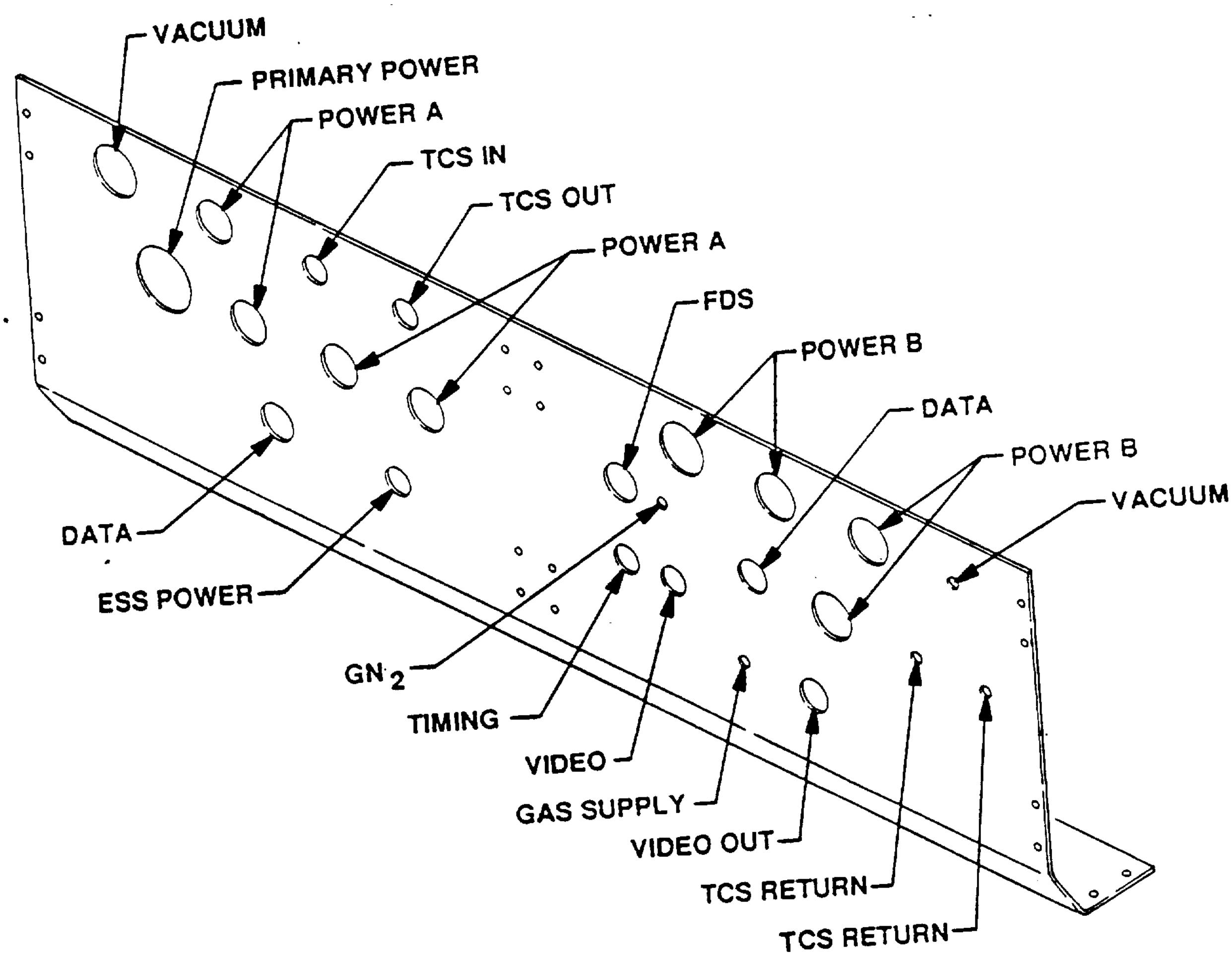



FIGURE 1.2-5. CORE RACK PANEL LAYOUT

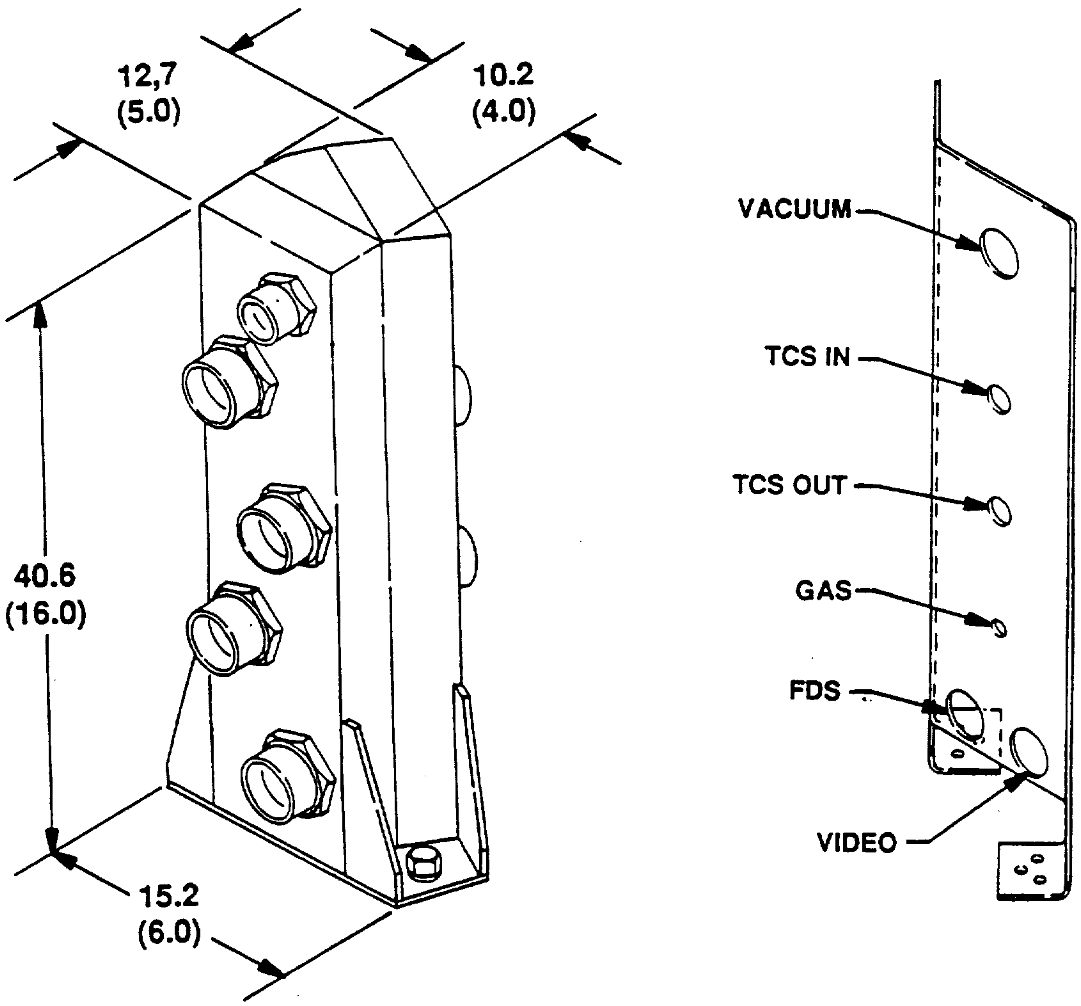



FIGURE 1.2-6. EXPERIMENT RACK-1 PANEL LAYOUTS

1.2.2.4 Crew Interface

A keyboard and display interface will be provided for crew interaction at the Core Rack. This system will have a standard QWERTY-type keyboard which can accept crew input commands for operation or configuration of the SSFF subsystems as required. Experiment sample exchanges will also require crew interface at Furnace Module-1, and opening and closing of manual valves will require crew interface at both rack locations.

## 1.3. POINTING/STABILIZATION AND ALIGNMENT

The Space Station Furnace Facility (SSFF) is required to provide for the alignment of the axis of selected solidification modules to within 5° of the residual g-vector. An acceleration of approximately 1.8 by $10^{-6}$ $g_o$ is required to prevent a 100-μm particle from moving 1 diameter in 1000 sec.

The allowable acceleration level requirements are as follows for a 1-cm diameter sample:

1. $g \leq 1.0 \times 10^{-6}\, g_o$ for $0 \leq f \leq 0.020$ for periods up to 90 days
2. $g \leq 1.0 \times 10^{-6}\, g_o \times \left(\frac{f}{0.020\ \text{Hz}}\right)$ for $f \geq 0.020$ along residual g-vector
3. $g' \leq 1.6 \times 10^{-7}\, g_o \times \left(\frac{f}{0.020\ \text{Hz}}\right)$ for $f \geq 0.012$ along any axis perpendicular to the residual g-vector

where,

- g = Acceleration level within the experimental sample fluid (melt, solution, or vapor) and at the solidification/fluid interface.
- go = Acceleration at sea level on Earth.
- g' = Acceleration level perpendicular to direction of solidification front or desired fluid motion.
- f = Frequency of periodic accelerations in hertz.

Furnace Module-1 requires that there shall be 1-mm maximum lateral displacement between sample and furnace centerlines at any point along centerlines at any time during processing. This does not include any contribution from the sample's being not straight or out of round. It does include heater assembly and translation system contributions.

## 1.4. ORBITAL REQUIREMENTS AND CONSTRAINTS

TBD

## 1.5. ELECTRICAL REQUIREMENTS

The Space Station Furnace Facility (SSFF) Power Conditioning and Distribution Subsystem (PCDS) is composed of the equipment necessary to condition and distribute power provided by the Space Station Freedom (SSF) Electrical Power System (EPS) to SSFF subsystems. Figure 1.5-1 shows the PCDS block diagram. The SSFF PCDS will interface with the SSF by connecting to two 6-kW, 120-Vdc power buses. Since 3- and 6-kW SSF payload racks use one bus as a primary feed and the other as an essential feed, 12-kW racks are required to maintain 1 MΩ of electrical isolation between the two buses at all times (SSF Electric Power Specifications and Standards, SSP 30482). No true essentials bus exists at this time, only the two main buses. This means that a 12-kW rack must tie the two buses together whenever backup essentials power will be required. The two SSFF power buses (Bus A and Bus B) will feed the PCDS via SSF-provided Remote Power Distribution Assemblies (RPDAs) or through an SSFF-designed assembly (similar in function).

The bulk of the power to be distributed by the PCDS will be consumed by the Furnace Module-1 heaters with the remainder serving as housekeeping power to the SSFF subsystems. The Integrated Configuration-1 (IC1) configuration of the SSFF will require maximum peak power from the SSF of 4.6 kW. The operational power profile defining the use of the SSF-provided power by the SSFF during each functional objective (FO) is shown in Figure 1.5-2. The power profile data given here represent power requirement estimates to cover any of the the SSFF-accommodated Furnace Module-1 needs. The power levels defined in Figure 1.5-2 are considered maximums. Time duration for peak power requirements is 72 h. The average power required is 2.7 kW. The total energy requirement is 3800 kWh.

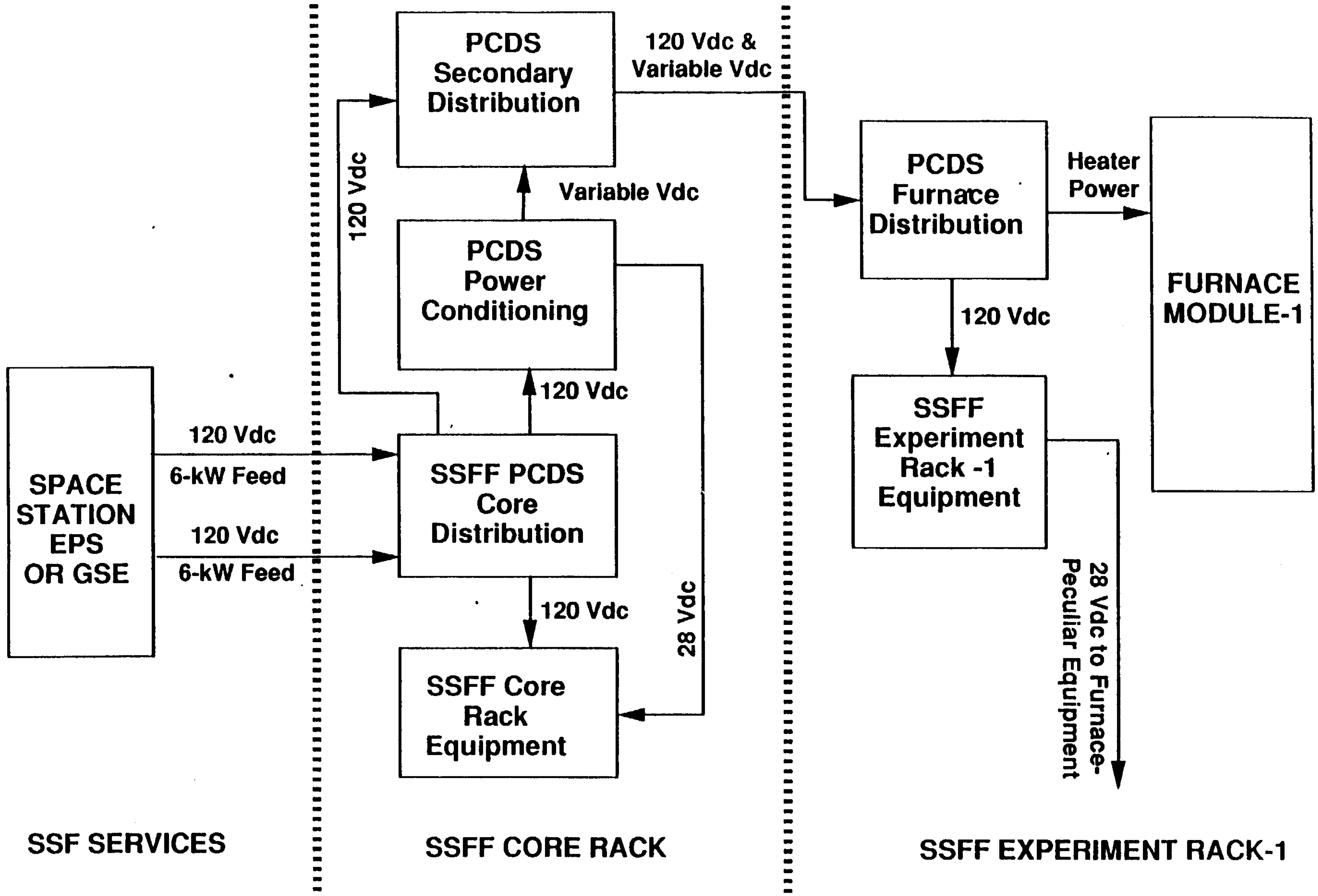
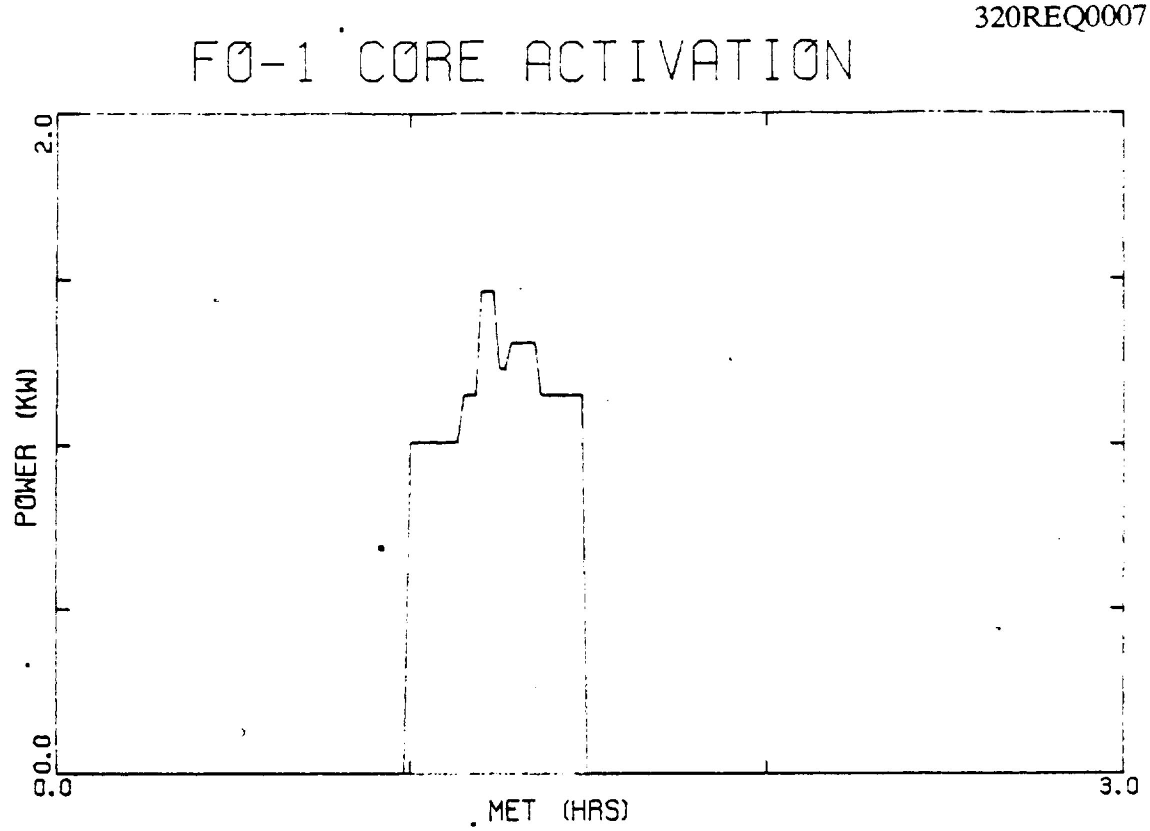



FIGURE 1.5-1. PCDS INTERFACE BLOCK DIAGRAM



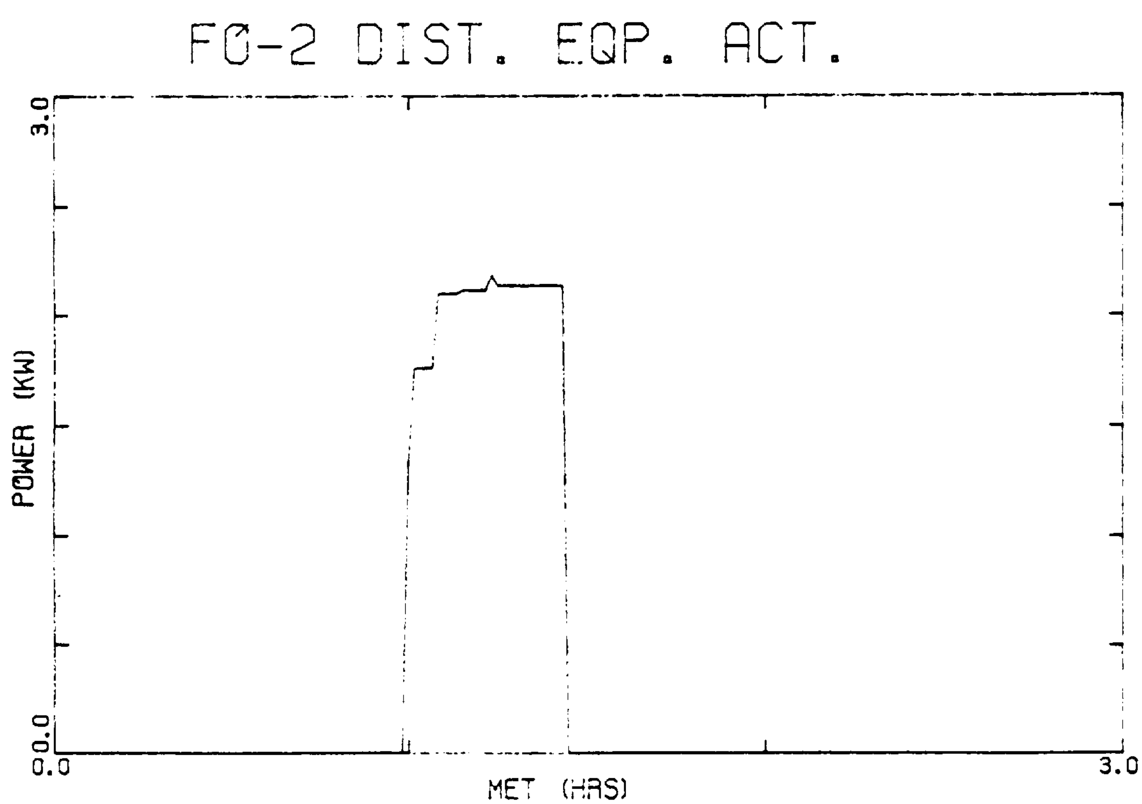
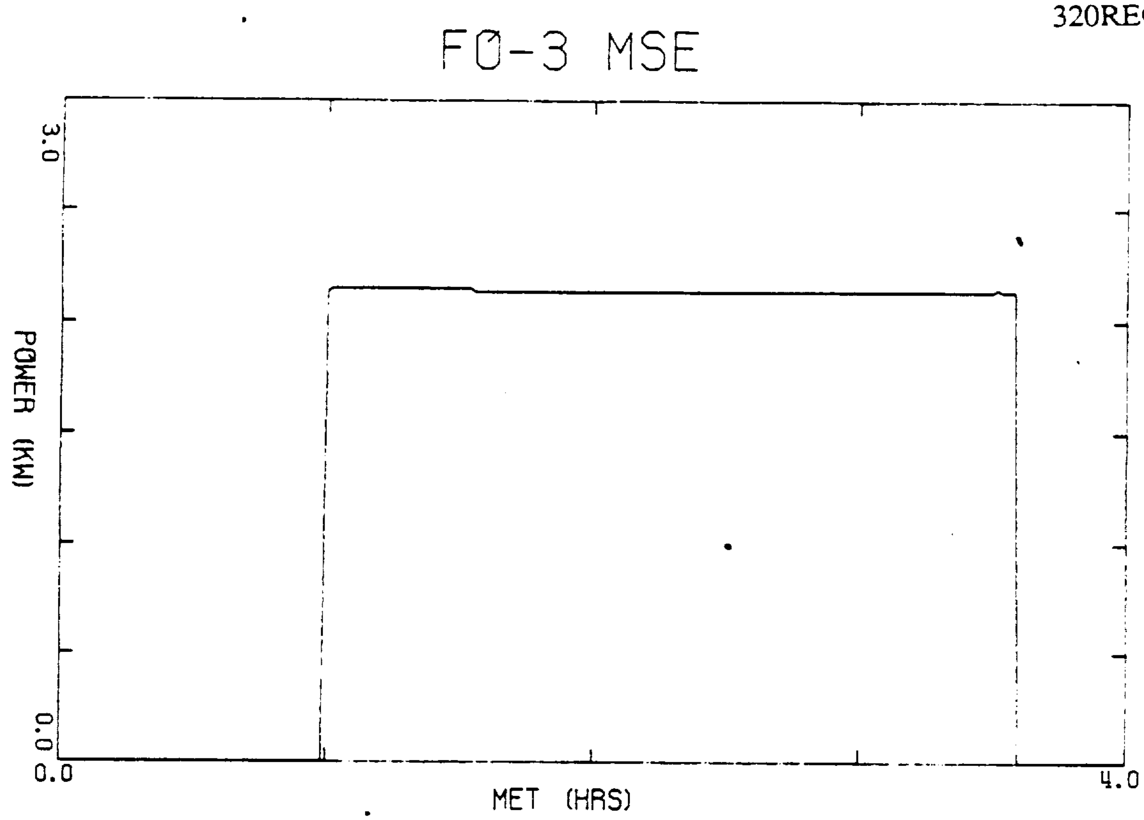




FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 1 of 6)



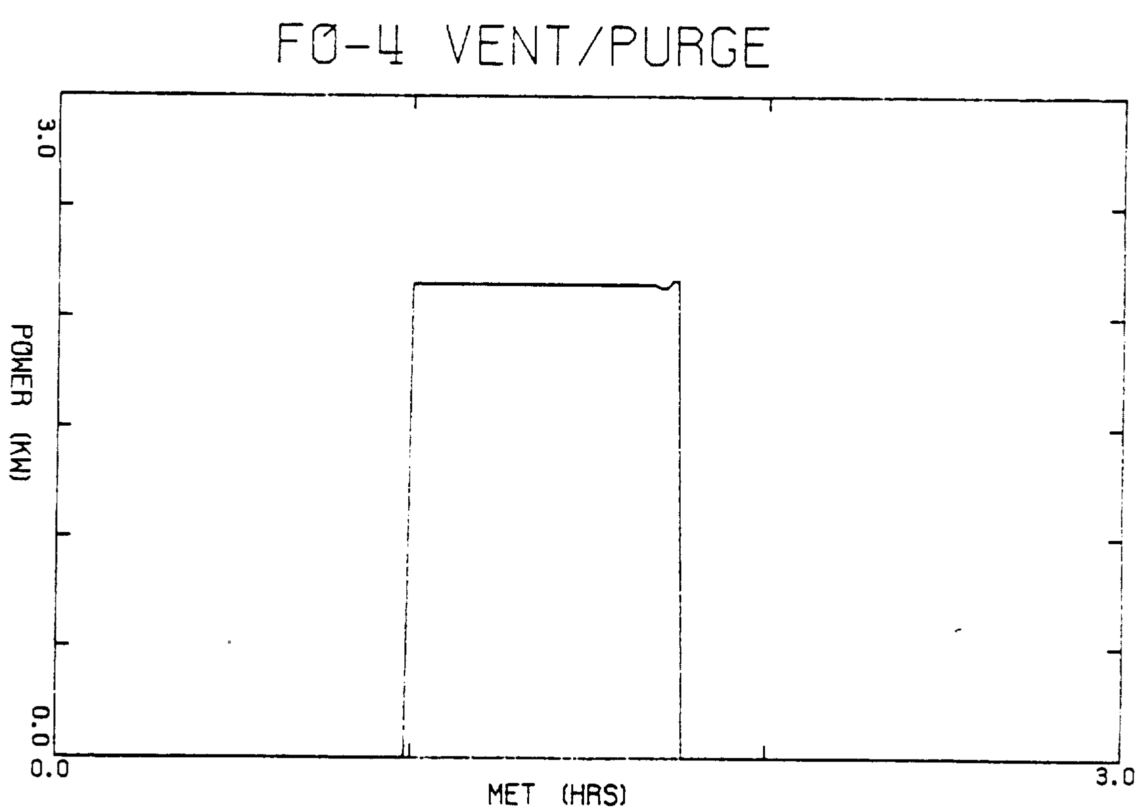
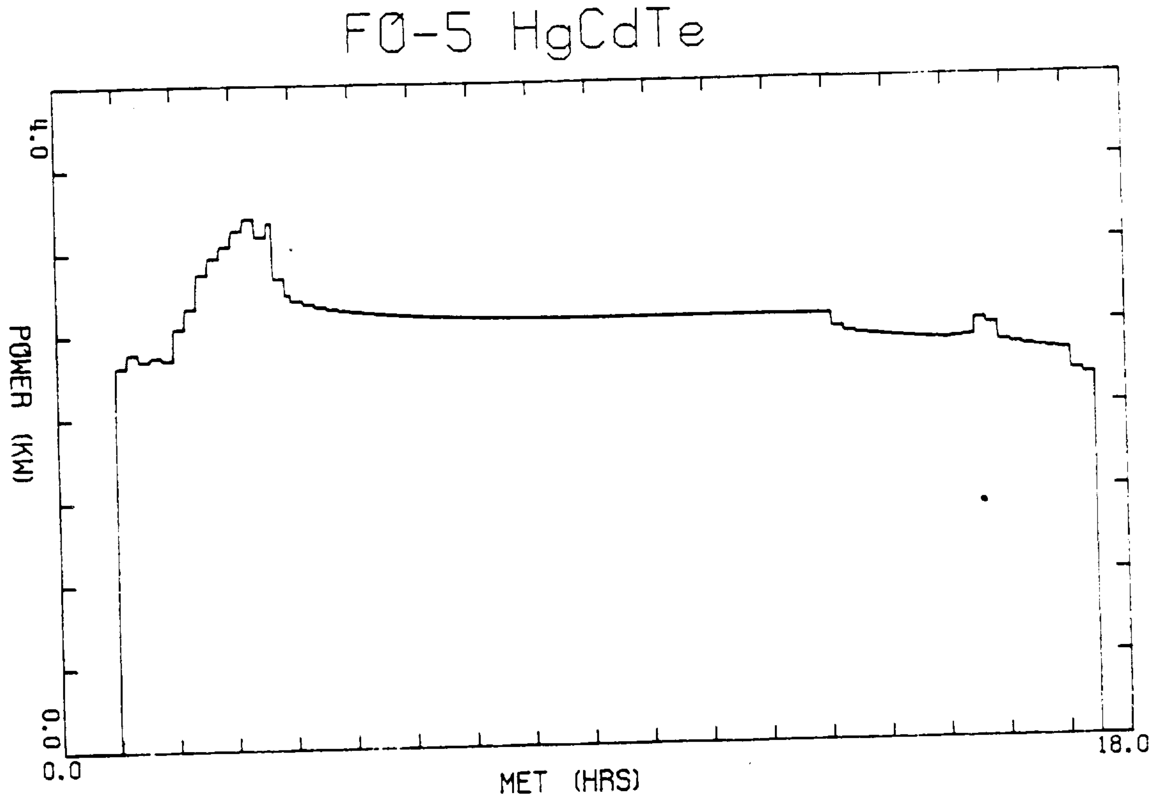




FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 2 of 6)



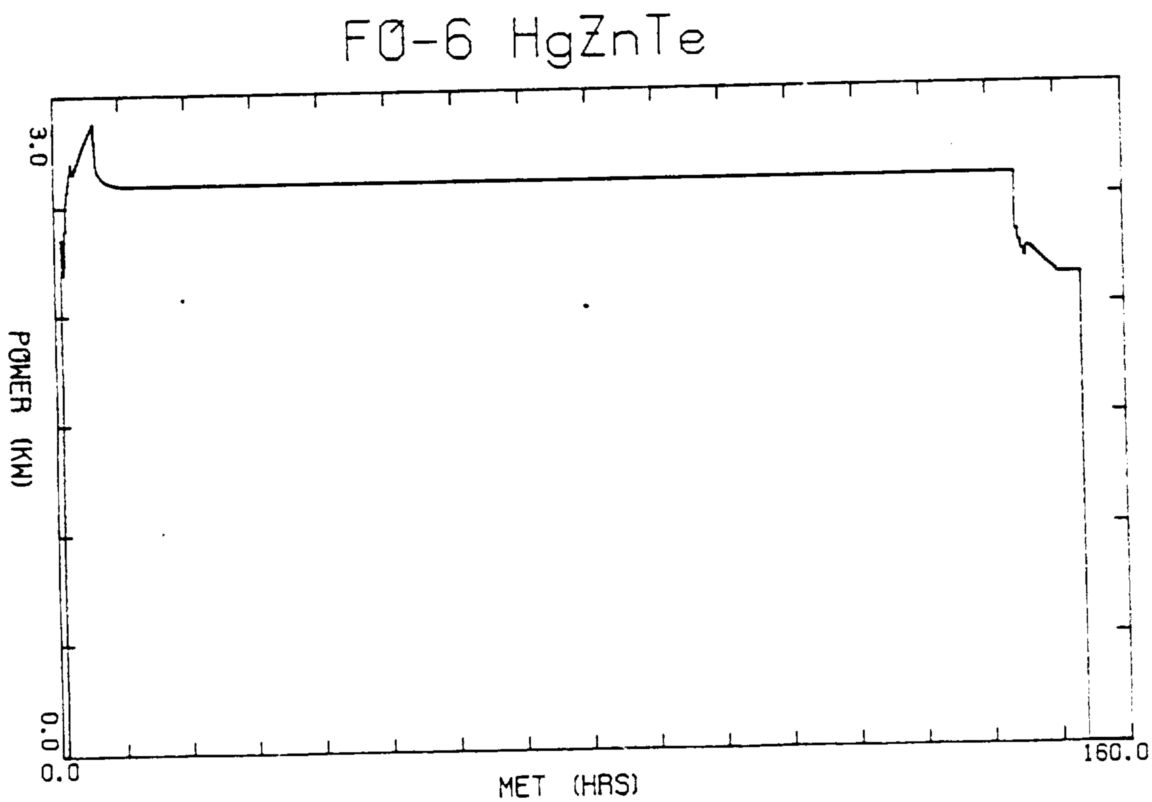
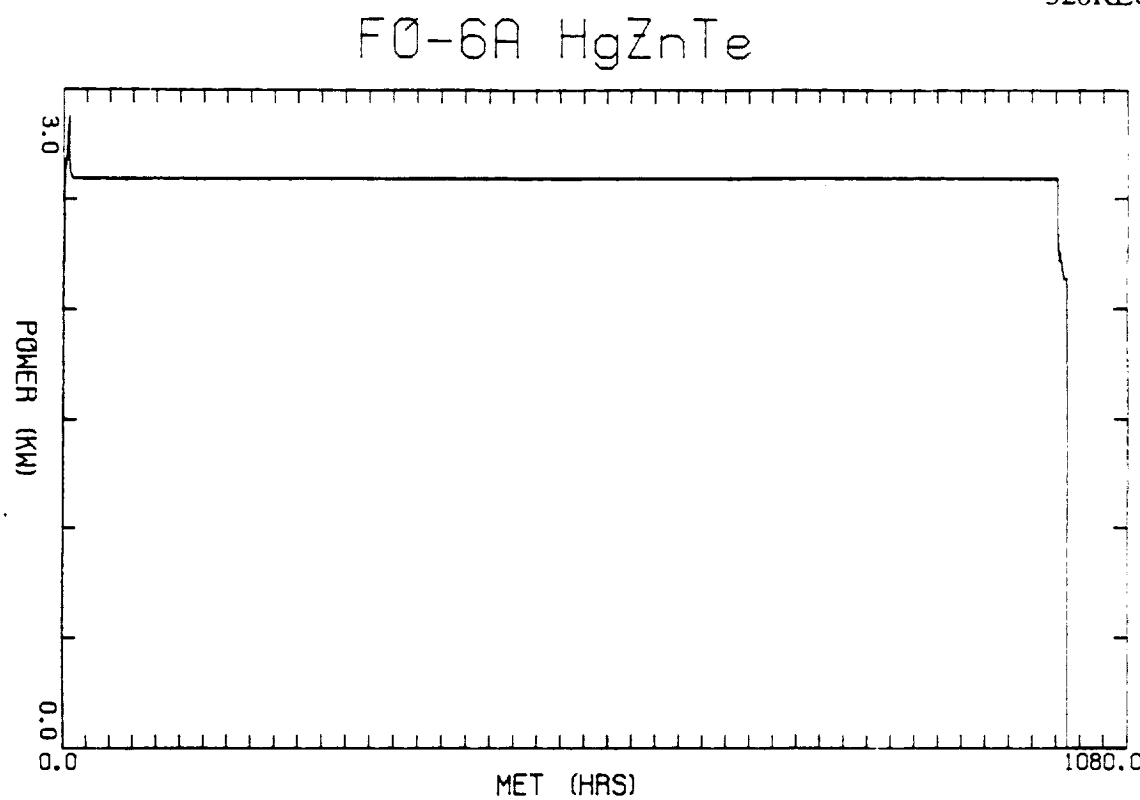




FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 3 of 6)



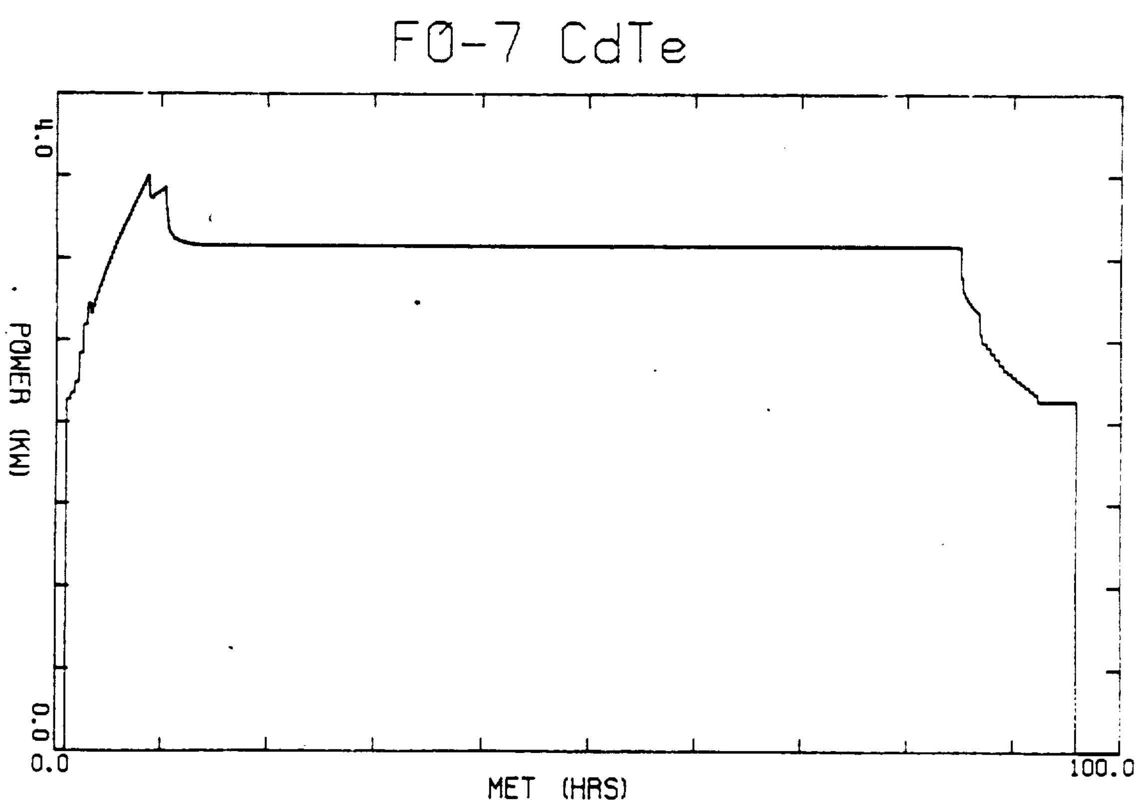
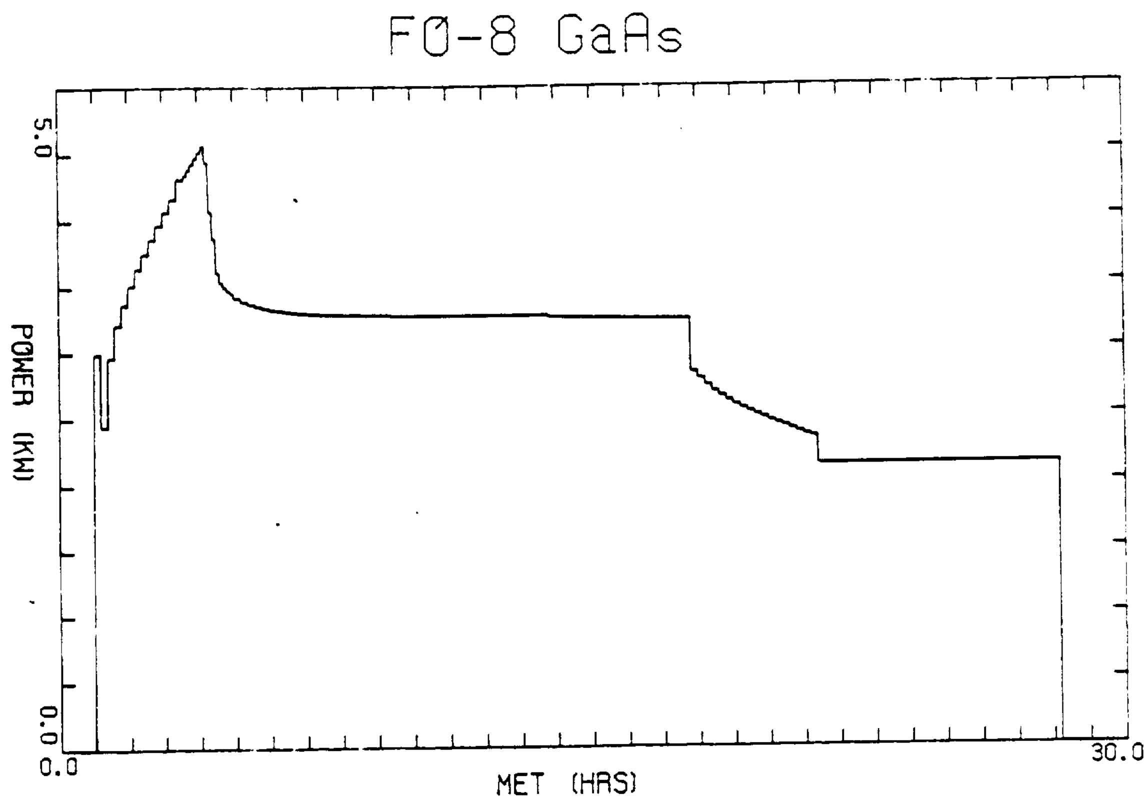




FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 4 of 6)



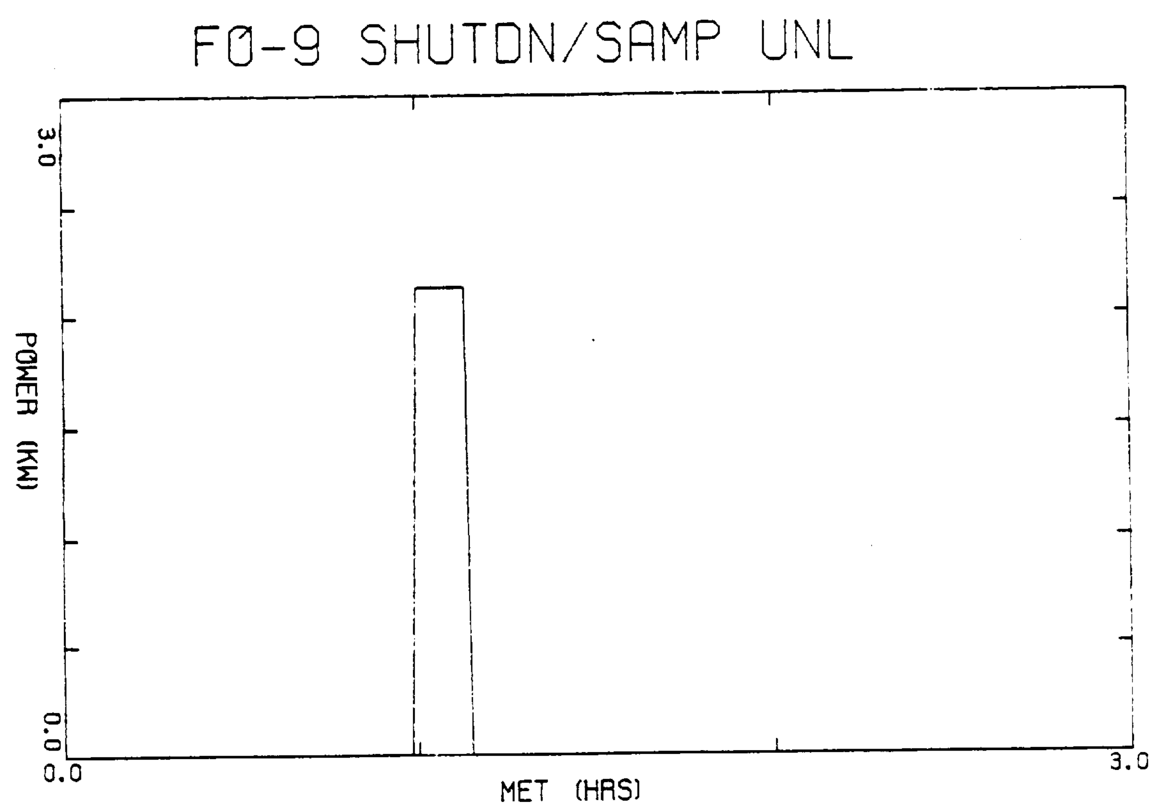




FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 5 of 6)

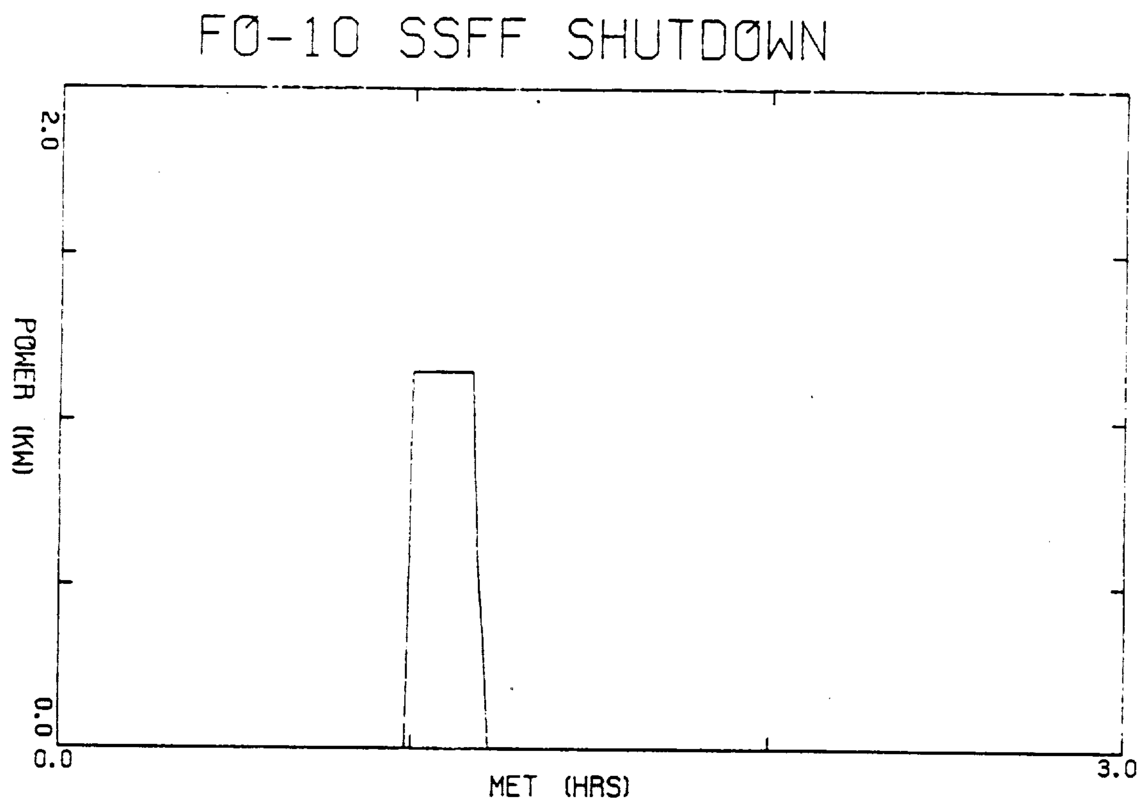



FIGURE 1.5-2. POWER PROFILES BY FUNCTIONAL OBJECTIVES (Sheet 6 of 6)

# 1.6. THERMAL/FLUID REQUIREMENTS

## 1.6.1 HEAT TRANSFER CHARACTERISTICS

The Space Station Furnace Facility (SSFF) Thermal Control System (TCS) water cooling loop will collect heat from Furnace Module-1 and the Core Rack electronics. The collected heat will then be transferred to the Space Station Freedom (SSF) TCS moderate temperature loop via the Core Rack heat exchanger. Figure 1.6-1 shows the TCS block diagram. On-orbit thermal requirements of the SSFF are shown in Table 1.6-1.

The SSFF TCS water cooling loop collects heat from the furnace modules and subsystem electronics. The collected heat is then transferred to the SSF TCS via the Core Rack heat exchanger. Total maximum heat dissipation of the Integrated Configuration-1 (IC1) configuration of SSFF to the SSF TCS is 4518 W.

Avionics air will be required to cool some SSFF subsystem equipment in both racks. Total maximum heat dissipation to avionics air is 371 W in the Core Rack and 366 W in Experiment Rack-1.

## 1.6.2 FLUID/VENT REQUIREMENTS

The Gas Distribution Subsystem (GDS) provides the distribution of SSF-provided gases and vacuum to Furnace Module-1. It also provides contamination monitoring of waste gases and gaseous argon to Furnace Module-1. The GDS block diagram is shown in Figure 1.6-2.

The IC1 configuration of the SSFF GDS will require 10.4 kg of SSF-provided dry nitrogen at the Core Rack per 90-day mission, supplied at 618 to 756 kPa (90 to 110 psia). This will be regulated down internally in the core to approximately 137 to 240 kPa (20 to 35 psia) for safe pressurization of the furnace enclosures. The GDS will also require the SSF-provided vacuum at the Core Rack, which furnishes the furnace modules access to the 1 x $10^{-3}$ torr vacuum line.

Gas and vacuum requirements for the IC1 configuration of SSFF are shown in Table 1.6-2.

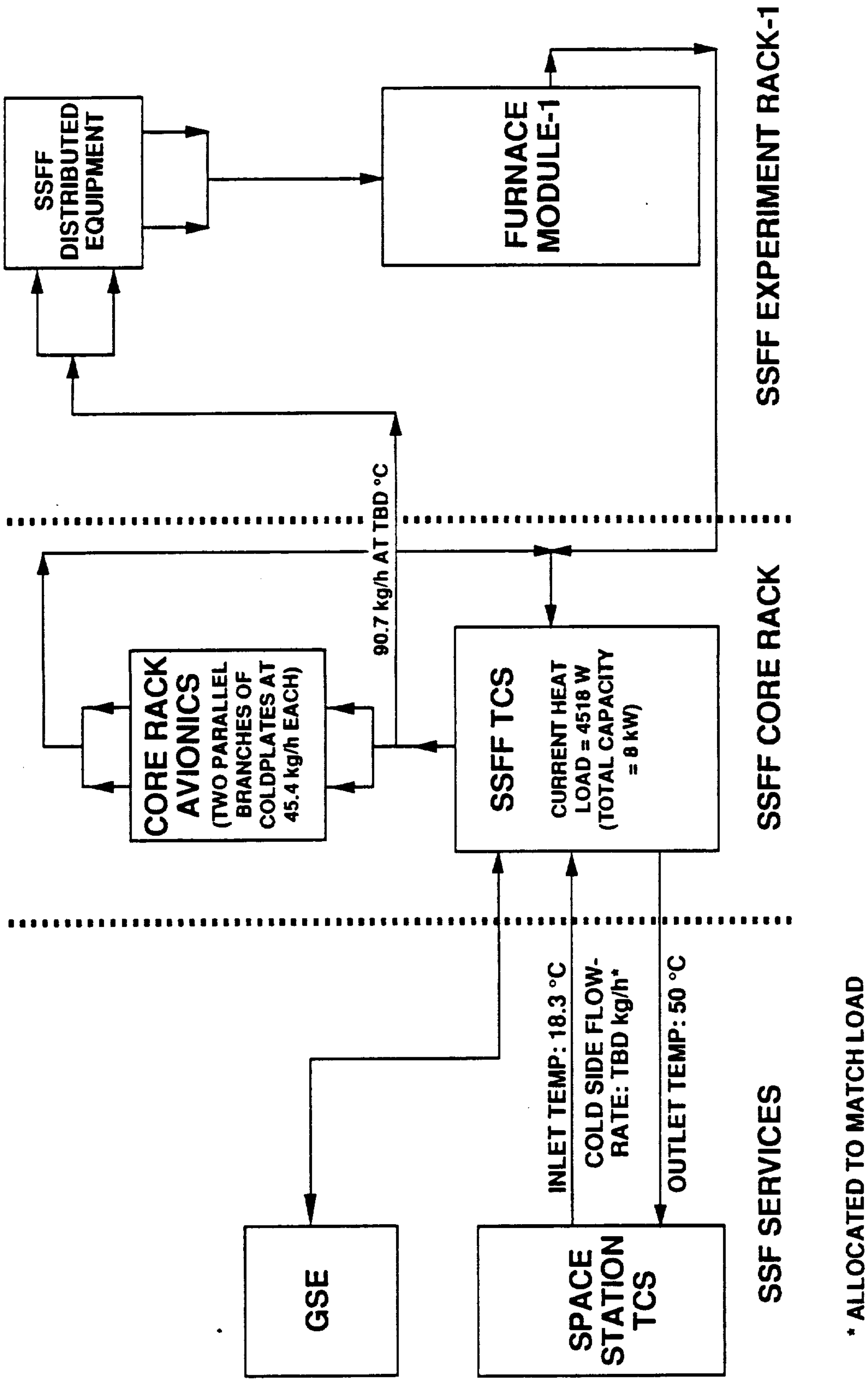



FIGURE 1.6-1. TCS INTERFACE BLOCK DIAGRAM

TABLE 1.6-1. ON-ORBIT THERMAL REQUIREMENTS (Sheet 1 of 2)

| Equipment Item and FO No. | Heat-Sink Type | | | | | Cooling Load (W) | | | Min/Max Temp (°C) | | | Thermal Capacitance (W-h-°C) | Special Considerations (as applicable) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cabin | Av. Air (nonducted) | Av. Air (ducted) | Exp CP (SSFF) | Exp. HX | Standby | Operate | Peak* or other | Standby | Operate | Non-Operate | | |
| FO-1 | | X | | | | | 134 | 200 | | 17/43 | | TBD | |
| FO-1 | | | | X | | | 1053 | 1327 | | 18/50 | | TBD | |
| FO-2 | | X | | | | | 310 | 391 | | 17/43 | | TBD | |
| FO-2 | | | | X | | | 1653 | 1817 | | 18/50 | | TBD | |
| FO-3 | | X | | | | | 323 | 332 | | 17/43 | | TBD | |
| FO-3 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-4 | | X | | | | | 332 | 347 | | 17/43 | | TBD | |
| FO-4 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-5 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-5 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-5 | | | | | X | | 232 | 270 | | TBD | | TBD | |
| FO-6 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-6 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-6 | | | | | X | | 283 | 285 | | TBD | | TBD | |
| FO-6A | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-6A | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-6A | | | | | X | | 283 | 285 | | TBD | | TBD | |
| FO-7 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-7 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-7 | | | | | X | | 525 | 580 | | TBD | | TBD | |
| FO-8 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-8 | | | | X | | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-8 | | | | | X | | 524 | 697 | | TBD | | TBD | |

TABLE 1.6-1. ON-ORBIT THERMAL REQUIREMENTS (Sheet 2 of 2)

| Equipment Item and FO No. | Heat-Sink Type: Cabin | Heat-Sink Type: Av. Air (nonducted) | Heat-Sink Type: Av. Air (ducted) | Heat-Sink Type: Exp CP (SSFF) | Heat-Sink Type: Exp. HX | Cooling Load (W): Standby | Cooling Load (W): Operate | Cooling Load (W): Peak* or other | Min/Max Temp (°C): Standby | Min/Max Temp (°C): Operate | Min/Max Temp (°C): Non-Operate | Thermal Capacitance (W-h-°C) | Special Considerations (as applicable) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FO-9 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-9 | | | | | X | | 1817 | 1817 | | 18/50 | | TBD | |
| FO-10 | | X | | | | | 44 | 121 | | 17/43 | | TBD | |
| FO-10 | | | | | X | | 465 | 1026 | | 18/50 | | TBD | |
| FO-11 | | X | | | | | 317 | 317 | | 17/43 | | TBD | |
| FO-11 | | | | | X | | 2000 | 2016 | | 18/50 | | TBD | |

* Each FO contains multiple steps; therefore, peak water-cooled load and peak avionics air load may not occur on the same step.

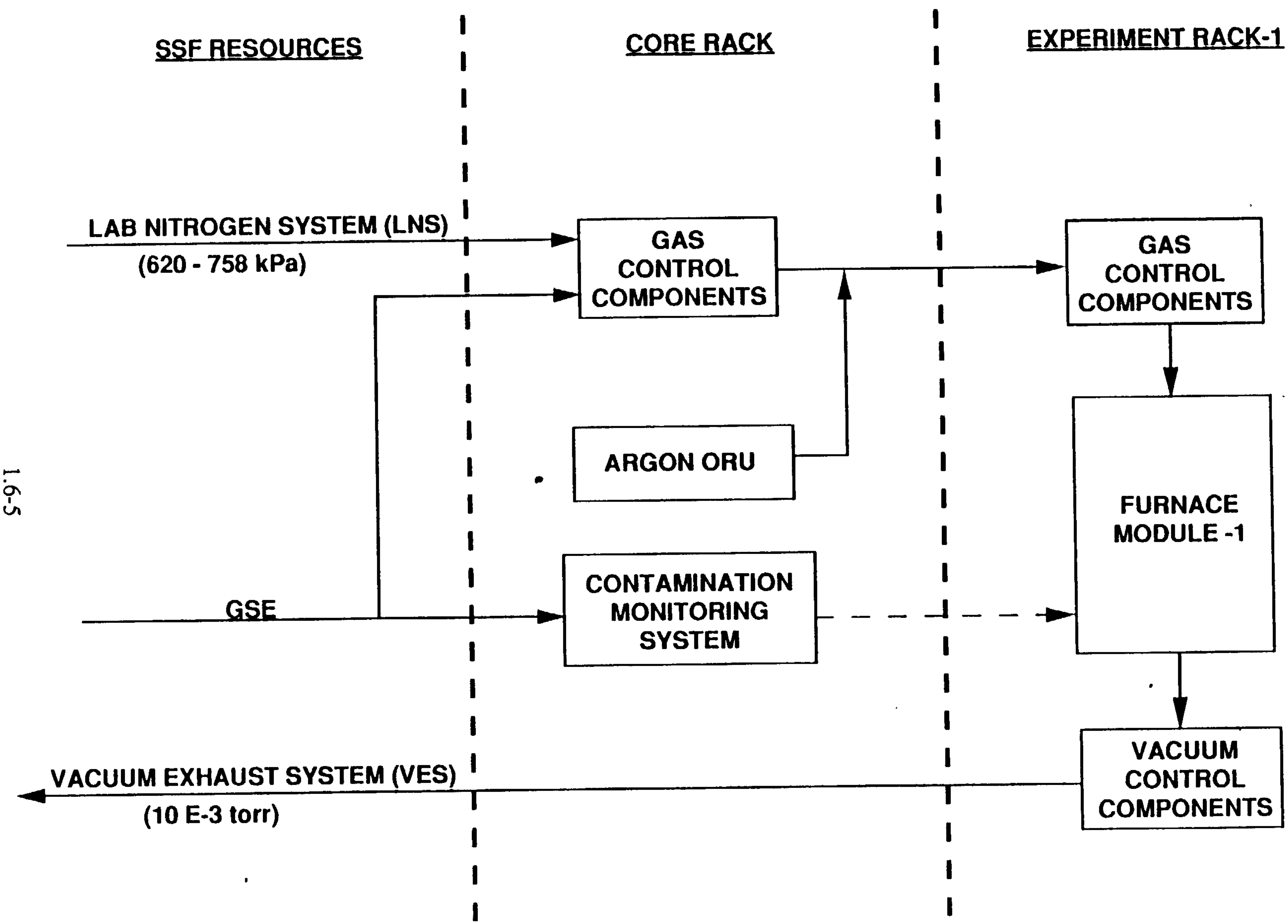



FIGURE 1.6-2. GDS INTERFACE BLOCK DIAGRAM

TABLE 1.6-2. FLUID REQUIREMENTS

| Equipment Item and FO No. | Functional Requirement (Pressure, Purge, Vent Vacuum) | Gas or Liquid Parameters | | | | | Vent | | Vacuum Vent Rate: torr-l/sec | Special Considerations (as applicable) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type | Quantity Stored (kg) | Pressure Limits (N/m2) | Flow-rate (kg/h) | Pressure Drop (N/m2) | Pressure (Pa) | When Required and Duration | | |
| FO-1 | N/A | | | | | | | | | |
| FO-2 | N/A | | | | | | | | | |
| FO-3 | Purge/vent | $GN_2$ | 1.4 (supp. by SSF) | TBD • | TBD | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-4 | $N_2$ purge/vent | $GN_2$ | 1.4 | TBD | TBD | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-4 | Ar purge/vent | Ar | 1.9 | TBD | TBD | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-5 | N/A | | | | | | | | | |
| FO-6 | N/A | | | | | | | | | |
| FO-6A | N/A | | | | | | | | | |
| FO-7 | N/A | | | | | | | | | |
| FO-8 | N/A | | | | | | | | | |
| FO-9 | Vent | | | | | | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-10 | N/A | | | | | | | | | |
| FO-11 | N/A | | | | | | | | | |

# 1.7. DATA SYSTEM REQUIREMENTS

This section describes the Space Station Furnace Facility (SSFF) Data Management System (DMS) and the data system requirements of the SSFF to Space Station Freedom (SSF). The SSFF DMS contains the electronics for control and monitoring of subsystems associated with SSFF Core and Furnace Module-1 operations, including the Thermal Control Subsystem (TCS), the Power Conditioning and Distribution Subsystem (PCDS), and the Gas Distribution Subsystem (GDS). In addition to these subsystem tasks, the DMS also monitors and controls the unique functions of Furnace Module-1 including closed loop control of heater temperatures via thermocouple inputs (and other sensors), sensing and control of furnace translation (i.e., movement of the relative sample position to the hot/cold zones), and sensing and control of the Furnace Module-1 actuators and effectors. The DMS provides a communications media for the facility, stores digitized experiment data, and provides an interface to the SSF DMS. The SSFF DMS, as shown in Figure 1.7-1, consists of the Core and distributed components. Subsections 1.7.1 through 1.7.5 and Tables 1.7-1 through 1.7-5 define the DMS interface data and resource requirements of the SSFF.

## 1.7.1 SIGNAL INTERFACE DEFINITION

Table 1.7-1 defines the following data signals and control:

- Onboard and uplink commands to the SSFF and SSFF Furnace Module-1
- Routing of SSFF Core housekeeping data
- Routing of Furnace Module-1 housekeeping data
- Routing of Furnace Module-1 science data

## 1.7.2 SIGNAL INTERFACE DEFINITION EXPANSION

Table 1.7-2 is an expansion of the data from Table 1.7-1.

## 1.7.3 EVENT/EXCEPTION MONITORING REQUIREMENTS

Onboard event and exception monitoring requirements for SSFF and Furnace Module-1 are defined in Table 1.7-3.

## 1.7.4 PAYLOAD OPERATIONS INTEGRATION CENTER DISPLAY REQUIREMENTS

The Payload Operations Integration Center (POIC) controls all payload operations and is equipped with consoles for data management, operations control, and mission planning. The data to provide this capability are shown in Table 1.7-4.

## 1.7.5 POIC LIMIT SENSING/EXCEPTION MONITORING REQUIREMENTS

Limit sensing and exception monitoring is provided to the POIC via downlink and is defined in Table 1.7-5.

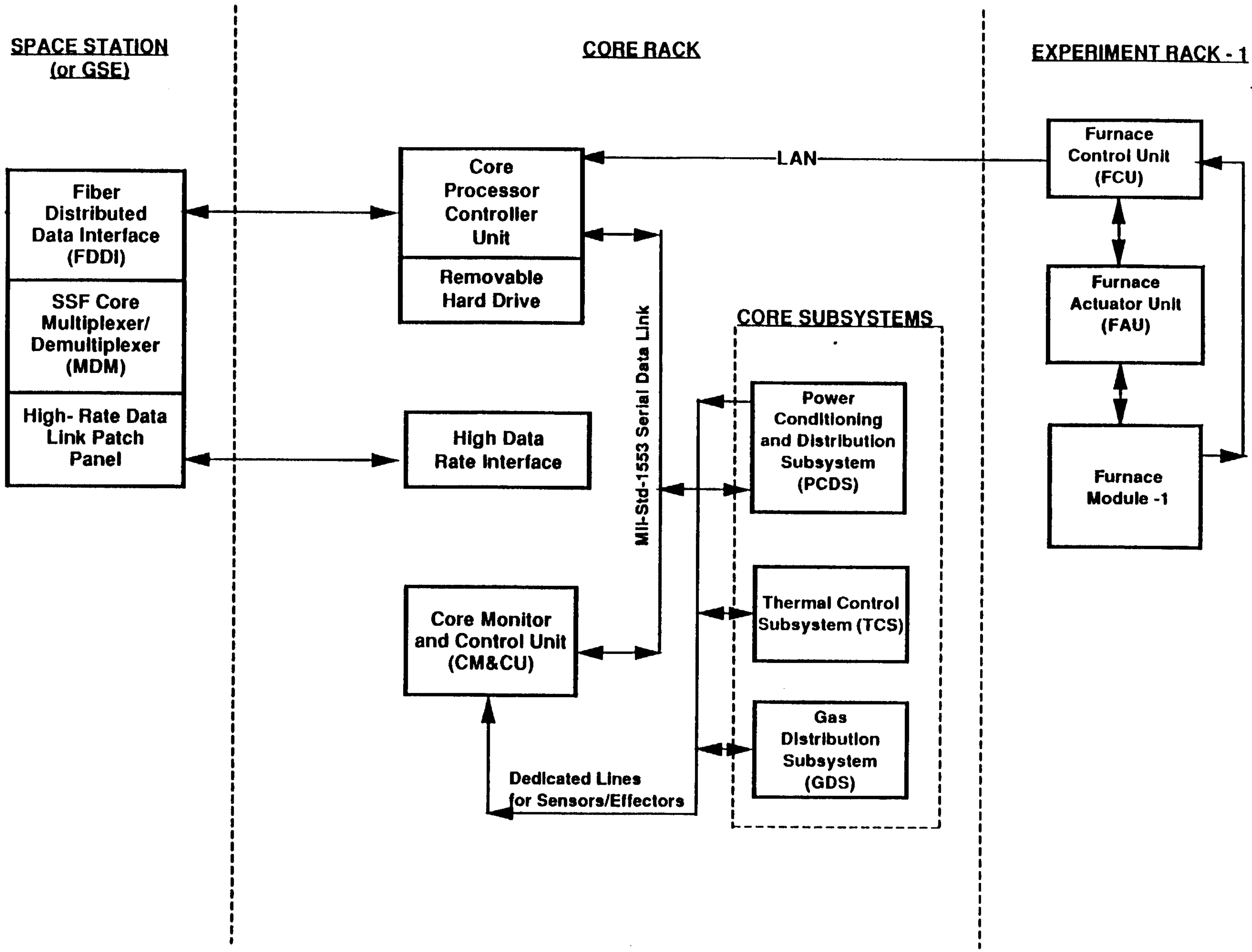



FIGURE 1.7-1. DMS INTERFACE BLOCK DIAGRAM

# TABLE 1.7-1. SIGNAL INTERFACE DEFINITION

```
----------------------------------------------------------------------------------------------------
|   |                              |C|S D|I N|SER.DATA |E|E|C|S R|///////////////RESERVED//////////////|
|   |                              |M|I E|N O|---------|V|X|A|A A|-----------|---------|-------------|
|   |                              |D|G F|T . |NM|NW|S|T|E|C|L|M T|    |    |  | |    |  | |  |    | | |
|   |                              | |N . |R  |OS|OO|O|Y|N|P|.|P E|    |    |  | |    |  | |  |    | | |
|ENT|         DESCRIPTION          |U|A   |F  |.G|.R|  |P|T|M|C|L  |    |    |  | |    |  | |  |    | | |
|NO.|                              |L|L   |A  |OS|OD|F|E|  |O|O|E  |    |    |  | |    |  | |  |    | | |
|   |                              |K|    |C  |F |FS|X|  |  |N|F|   |    |    |  | |    |  | |  |    | | |
----------------------------------------------------------------------------------------------------
|106|FURNACE MODULE HOUSEKEEPING DATA|  |SI |  1| 3|32|  |N| | | |  1|    |    |  | |    |  | |  |    | | |
|107|SSFF HOUSEKEEPING DATA          |  |SI |  1| 3|32|  |N| | | |  1|    |    |  | |    |  | |  |    | | |
|850|FURNACE SCIENCE DATA            |  |SI |  1| 3|32|  |N| | | |  1|    |    |  | |    |  | |  |    | | |
|851|FURNACE SCIENCE DATA            |  |SI |  1| 3|32|  |N| | | |  1|    |    |  | |    |  | |  |    | | |
|900|SSF CMDS & S/W PATCHES TO SSFF  |Y|SO |  1|  |  |  |N| | | |  1|    |    |  | |    |  | |  |    | | |
----------------------------------------------------------------------------------------------------
            1         2         3          4              5          6              7              8
123 4567890123456789012345678901234 5 6 789 012 34 56 7 8 9 0 1 234 567 890 123 4 567 890 1 23 4567 89 0
```

TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 1 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MSG. NO. | NO/WDS/MSG | SO FIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 107 | SSFF HOUSEKEEPING DATA | | SS | | | | | | | | | | | | | | | | 41 | 2 |
| 200 | 106 | Go/NoGo Error Override | | DI | 01 | | | B | 00 | 00 | 00 | 00 | | | | | Y | | 3330 | 41 | 2 |
| 201 | 106 | Process Elapsed Time - Seconds | | DG | 01 | 06 | | U | 00 | 01 | 00 | 06 | | | | | Y | | 3331 | 41 | 2 |
| 202 | 106 | CGF Sytstem State | | DG | 01 | 03 | | U | 00 | 07 | 00 | 09 | | | | | Y | | 3332 | 41 | 2 |
| 203 | 106 | Sample Number (Mode) | | DG | 01 | 06 | | U | 00 | 10 | 00 | 15 | | | | | Y | | 3333 | 41 | 2 |
| 204 | 106 | Process Elapsed Time - Hours | | DG | 01 | 10 | | U | 01 | 00 | 01 | 09 | | | | | Y | | 3334 | 41 | 2 |
| 205 | 106 | Process Elapsed Time - Minutes | | DG | 01 | 06 | | U | 01 | 10 | 01 | 15 | | | | | Y | | 3335 | 41 | 2 |
| 207 | 106 | IFEA Water Outlet Temp | | AI | 01 | | | S | 03 | 00 | 03 | 07 | | | Y | Y | Y | | 3336 | 41 | 2 |
| 208 | 106 | IFEA Lower Humidity | | AI | 01 | | | S | 04 | 00 | 04 | 07 | | | Y | Y | Y | | 3337 | 41 | 2 |
| 209 | 106 | IFEA Upper Humidity | | AI | 01 | | | S | 05 | 00 | 05 | 07 | | | Y | Y | Y | | 3338 | 41 | 2 |
| 210 | 106 | IFEA Upper Atmosphere Temp | | AI | 01 | | | S | 12 | 00 | 12 | 07 | | | Y | Y | Y | | 3355 | 41 | 2 |
| 211 | 106 | RFM Cold End Shell Temp | | AI | 01 | | | S | 13 | 00 | 13 | 07 | | | Y | Y | Y | | 3356 | 41 | 2 |
| 212 | 106 | RFM Hot End Shell Temp | | AI | 01 | | | S | 14 | 00 | 14 | 07 | | | Y | Y | Y | | 3357 | 41 | 2 |
| 213 | 106 | Ampoule Alignment Arm Temp | | AI | 01 | | | S | 15 | 00 | 15 | 07 | | | | Y | Y | | 3358 | 41 | 2 |
| 214 | 106 | SEM Track Temp | | AI | 01 | | | S | 16 | 00 | 16 | 07 | | | | Y | Y | | 3359 | 41 | 2 |
| 215 | 106 | IFEA Absolute Pressure 1 | | AI | 01 | | | S | 17 | 00 | 17 | 07 | | | Y | Y | Y | | 3360 | 41 | 2 |
| 216 | 106 | IFEA Absolute Pressure 2 | | AI | 01 | | | S | 18 | 00 | 18 | 07 | | | Y | Y | Y | | 3361 | 41 | 2 |
| 217 | 106 | Furnace Linear Position | | AI | 01 | | | S | 19 | 00 | 19 | 07 | | | | Y | Y | | 3362 | 41 | 2 |
| 218 | 106 | Indexing CAM Rotary Position | | AI | 01 | | | S | 20 | 00 | 20 | 07 | | | | Y | Y | | 3363 | 41 | 2 |
| 219 | 106 | Experiment Main Bus Current | | AI | 01 | | | S | 21 | 00 | 21 | 07 | | | Y | Y | Y | | 3364 | 41 | 2 |
| 220 | 106 | Experiment Main Bus Voltage | | AI | 01 | | | S | 22 | 00 | 22 | 07 | | | Y | Y | Y | | 3365 | 41 | 2 |
| 221 | 106 | Water Outlet Vlv RCCB Off Status | | DI | 01 | | | B | 23 | 00 | 23 | 00 | | | | | Y | | 3250 | 41 | 2 |
| 222 | 106 | Water Outlet Vlv RCCB On Status | | DI | 01 | | | B | 23 | 01 | 23 | 01 | | | | | Y | | 3251 | 41 | 2 |
| 223 | 106 | IFEA Coolant Flow #1 Status | | DI | 01 | | | B | 23 | 02 | 23 | 02 | | | Y | | Y | | 3366 | 41 | 2 |
| 224 | 106 | IFEA Coolant Flow #2 Status | | DI | 01 | | | B | 23 | 03 | 23 | 03 | | | Y | | Y | | 3367 | 41 | 2 |
| 225 | 106 | Vacuum Vent Vlv RCCB Off Status | | DI | 01 | | | B | 23 | 04 | 23 | 04 | | | | | Y | | 3368 | 41 | 2 |
| 226 | 106 | Vacuum Vent Vlv RCCB On Status | | DI | 01 | | | B | 23 | 05 | 23 | 05 | | | | | Y | | 3369 | 41 | 2 |
| 227 | 106 | Hot Boost Mod A RCCB Off Status | | DI | 01 | | | B | 23 | 06 | 23 | 06 | | | | | Y | | 3370 | 41 | 2 |
| 228 | 106 | Hot Boost Mod A RCCB On Status | | DI | 01 | | | B | 23 | 07 | 23 | 07 | | | | | Y | | 3371 | 41 | 2 |
| 229 | 106 | Hot Boost Mod B RCCB Off Status | | DI | 01 | | | B | 23 | 08 | 23 | 08 | | | | | Y | | 3372 | 41 | 2 |
| 230 | 106 | Hot Boost Mod B RCCB On Status | | DI | 01 | | | B | 23 | 09 | 23 | 09 | | | | | Y | | 3373 | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 2 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMDULK | USAGE | MN SOG. | NM OS /G WDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL.CONF | CDT? | RCD IODE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 231 | 106 | | COLD Main Prim Mod RCCB Off Stat | | DI | 01 | | | B | 23 | 10 | 23 | 10 | | | | | Y | | 3374 | 41 | 2 |
| 232 | 106 | | COLD Main Prim Mod RCCB On Stat | | DI | 01 | | | B | 23 | 11 | 23 | 11 | | | | | Y | | 3375 | 41 | 2 |
| 233 | 106 | | HotMain Prim Mod A RCCB Off Stat | | DI | 01 | | | B | 23 | 12 | 23 | 12 | | | | | Y | | 3376 | 41 | 2 |
| 234 | 106 | | HotMain Prim Mod A RCCB On Stat | | DI | 01 | | | B | 23 | 13 | 23 | 13 | | | | | Y | | 3377 | 41 | 2 |
| 235 | 106 | | Water Inlet Valve RCCB Off Stat | | DI | 01 | | | B | 23 | 14 | 23 | 14 | | | | | Y | | 3378 | 41 | 2 |
| 236 | 106 | | Water Inlet Valve RCCB On Status | | DI | 01 | | | B | 23 | 15 | 23 | 15 | | | | | Y | | 3379 | 41 | 2 |
| 237 | 106 | | PDS Airflow 1 Status | | DI | 01 | | | B | 24 | 00 | 24 | 00 | | | Y | | Y | | 3380 | 41 | 2 |
| 238 | 106 | | SCS Airflow 1 Status | | DI | 01 | | | B | 24 | 01 | 24 | 01 | | | Y | | Y | | 3381 | 41 | 2 |
| 239 | 106 | | PCS Airflow 1 Status | | DI | 01 | | | B | 24 | 02 | 24 | 02 | | | Y | | Y | | 3382 | 41 | 2 |
| 240 | 106 | | PCS Airflow 2 Status | | DI | 01 | | | B | 24 | 03 | 24 | 03 | | | Y | | Y | | 3383 | 41 | 2 |
| 241 | 106 | | Argon Fill Valve RCCB Off Status | | DI | 01 | | | B | 24 | 04 | 24 | 04 | | | | | Y | | 3384 | 41 | 2 |
| 242 | 106 | | Argon Fill Valve RCCB On Status | | DI | 01 | | | B | 24 | 05 | 24 | 05 | | | | | Y | | 3385 | 41 | 2 |
| 243 | 106 | | PCS Utility RCCB Off Status | | DI | 01 | | | B | 24 | 06 | 24 | 06 | | | | | Y | | 3386 | 41 | 2 |
| 244 | 106 | | PCS Utility RCCB On Status | | DI | 01 | | | B | 24 | 07 | 24 | 07 | | | | | Y | | 3387 | 41 | 2 |
| 245 | 106 | | Peltier Conn Motor RCCB Off Stat | | DI | 01 | | | B | 24 | 08 | 24 | 08 | | | | | Y | | 3388 | 41 | 2 |
| 246 | 106 | | Peltier Conn Motor RCCB On Stat | | DI | 01 | | | B | 24 | 09 | 24 | 09 | | | | | Y | | 3389 | 41 | 2 |
| 247 | 106 | | Cold Main Red Mod RCCB Off Stat | | DI | 01 | | | B | 24 | 10 | 24 | 10 | | | | | Y | | 3390 | 41 | 2 |
| 248 | 106 | | Cold Main Red Mod RCCB On Status | | DI | 01 | | | B | 24 | 11 | 24 | 11 | | | | | Y | | 3391 | 41 | 2 |
| 249 | 106 | | Hot Main Prim Mod B RCCB Off Sta | | DI | 01 | | | B | 24 | 12 | 24 | 12 | | | | | Y | | 3392 | 41 | 2 |
| 250 | 106 | | Hot Main Prim Mod B RCCB On Stat | | DI | 01 | | | B | 24 | 13 | 24 | 13 | | | | | Y | | 3393 | 41 | 2 |
| 251 | 106 | | Hot Guard Module RCCB Off Status | | DI | 01 | | | B | 24 | 14 | 24 | 14 | | | | | Y | | 3394 | 41 | 2 |
| 252 | 106 | | Hot Guard Module RCCB On Status | | DI | 01 | | | B | 24 | 15 | 24 | 15 | | | | | Y | | 3395 | 41 | 2 |
| 253 | 106 | | Mech Pulsing Mod RCCB Off Status | | DI | 01 | | | B | 25 | 00 | 25 | 00 | | | | | Y | | 3252 | 41 | 2 |
| 254 | 106 | | Mech Pulsing Mod RCCB On Status | | DI | 01 | | | B | 25 | 01 | 25 | 01 | | | | | Y | | 3253 | 41 | 2 |
| 255 | 106 | | IFEA ABS Press 2 RCCB Off Status | | DI | 01 | | | B | 25 | 02 | 25 | 02 | | | | | Y | | 3396 | 41 | 2 |
| 256 | 106 | | IFEA ABS Press 2 RCCB On Status | | DI | 01 | | | B | 25 | 03 | 25 | 03 | | | | | Y | | 3397 | 41 | 2 |
| 257 | 106 | | IFEA ABS Press 1 RCCB Off Status | | DI | 01 | | | B | 25 | 04 | 25 | 04 | | | | | Y | | 3398 | 41 | 2 |
| 258 | 106 | | IFEA ABS Press 1 RCCB On Status | | DI | 01 | | | B | 25 | 05 | 25 | 05 | | | | | Y | | 3399 | 41 | 2 |
| 259 | 106 | | Vacuum Vent Valve Closed Status | | DI | 01 | | | B | 25 | 06 | 25 | 06 | | | | | Y | | 3400 | 41 | 2 |
| 260 | 106 | | Vacuum Vent Valve Open Status | | DI | 01 | | | B | 25 | 07 | 25 | 07 | | | | | Y | | 3401 | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 3 of 38)

| ENT NO. | CIRR. | NO. | DESCRIPTION | CMDLK | USAGE | MN SOG. | NM OS /G W D S / | S O F I X D | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL.COF | CDT? | RC IODE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 261 | 106 | | Argon Fill Valve Closed Status | | DI | 01 | | | B | 25 | 08 | 25 | 08 | | | | | Y | | 3402 | 41 | 2 |
| 262 | 106 | | Argon Fill Valve Open Status | | DI | 01 | | | B | 25 | 09 | 25 | 09 | | | | | Y | | 3403 | 41 | 2 |
| 263 | 106 | | Hot Main Red Mod A RCCB Off Stat | | DI | 01 | | | B | 25 | 10 | 25 | 10 | | | | | Y | | 3254 | 41 | 2 |
| 264 | 106 | | Hot Main Red Mod A RCCB On Stat | | DI | 01 | | | B | 25 | 11 | 25 | 11 | | | | | Y | | 3255 | 41 | 2 |
| 265 | 106 | | Water Outlet Valve Normal Stat | | DI | 01 | | | B | 25 | 12 | 25 | 12 | | | Y | | Y | | 3404 | 41 | 2 |
| 266 | 106 | | Water Outlet Valve Bypass Stat | | DI | 01 | | | B | 25 | 13 | 25 | 13 | | | Y | | Y | | 3405 | 41 | 2 |
| 267 | 106 | | Water Inlet Valve Normal Status | | DI | 01 | | | B | 25 | 14 | 25 | 14 | | | Y | | Y | | 3406 | 41 | 2 |
| 268 | 106 | | Water Inlet Valve Bypass Status | | DI | 01 | | | B | 25 | 15 | 25 | 15 | | | Y | | Y | | 3407 | 41 | 2 |
| 269 | 106 | | Fail Safe Brake RCCB Off Status | | DI | 01 | | | B | 26 | 00 | 26 | 00 | | | | | Y | | 3408 | 41 | 2 |
| 270 | 106 | | Fail Safe Brake RCCB On Status | | DI | 01 | | | B | 26 | 01 | 26 | 01 | | | | | Y | | 3409 | 41 | 2 |
| 271 | 106 | | Core Hold Down Not Retracted | | DI | 01 | | | B | 26 | 02 | 26 | 02 | | | | | Y | | 3410 | 41 | 2 |
| 272 | 106 | | Core Hold Down Retracted | | DI | 01 | | | B | 26 | 03 | 26 | 03 | | | | | Y | | 3411 | 41 | 2 |
| 273 | 106 | | Core Hold Down Not Extended | | DI | 01 | | | B | 26 | 04 | 26 | 04 | | | | | Y | | 3412 | 41 | 2 |
| 274 | 106 | | Core Hold Down Extended | | DI | 01 | | | B | 26 | 05 | 26 | 05 | | | | | Y | | 3413 | 41 | 2 |
| 275 | 106 | | Core HD Motor RCCB Off Status | | DI | 01 | | | B | 26 | 06 | 26 | 06 | | | | | Y | | 3414 | 41 | 2 |
| 276 | 106 | | Core HD Motor RCCB On Status | | DI | 01 | | | B | 26 | 07 | 26 | 07 | | | | | Y | | 3415 | 41 | 2 |
| 277 | 106 | | Step Motor Clutch RCCB Off Stat | | DI | 01 | | | B | 26 | 08 | 26 | 08 | | | | | Y | | 3416 | 41 | 2 |
| 278 | 106 | | Step Motor Clutch RCCB On Status | | DI | 01 | | | B | 26 | 09 | 26 | 09 | | | | | Y | | 3417 | 41 | 2 |
| 279 | 106 | | Step Motor Drive RCCB Off Stat | | DI | 01 | | | B | 26 | 10 | 26 | 10 | | | | | Y | | 3418 | 41 | 2 |
| 280 | 106 | | Step Motor Drive RCCB On Stat | | DI | 01 | | | B | 26 | 11 | 26 | 11 | | | | | Y | | 3419 | 41 | 2 |
| 281 | 106 | | Rapid Xlation Clutch RCCB Off St | | DI | 01 | | | B | 26 | 12 | 26 | 12 | | | | | Y | | 3420 | 41 | 2 |
| 282 | 106 | | Rapid Xlation Clutch RCCB On St | | DI | 01 | | | B | 26 | 13 | 26 | 13 | | | | | Y | | 3421 | 41 | 2 |
| 283 | 106 | | Rapid Xlation Mtr RCCB Off Stat | | DI | 01 | | | B | 26 | 14 | 26 | 14 | | | | | Y | | 3422 | 41 | 2 |
| 284 | 106 | | Rapid Xlation Mtr RCCB On Status | | DI | 01 | | | B | 26 | 15 | 26 | 15 | | | | | Y | | 3423 | 41 | 2 |
| 285 | 106 | | Furnace Position Not Home | | DI | 01 | | | B | 27 | 00 | 27 | 00 | | | | | Y | | 3424 | 41 | 2 |
| 286 | 106 | | Furnace Position Home | | DI | 01 | | | B | 27 | 01 | 27 | 01 | | | | | Y | | 3425 | 41 | 2 |
| 287 | 106 | | Furn Extreme Trvl Not Exceeded | | DI | 01 | | | B | 27 | 02 | 27 | 02 | | | Y | | Y | | 3426 | 41 | 2 |
| 288 | 106 | | Furn Extreme Trvl Exceeded | | DI | 01 | | | B | 27 | 03 | 27 | 03 | | | Y | | Y | | 3427 | 41 | 2 |
| 289 | 106 | | Ampoule Alignment Not Retracted | | DI | 01 | | | B | 27 | 04 | 27 | 04 | | | | | Y | | 3428 | 41 | 2 |
| 290 | 106 | | Ampoule Alignment Retracted | | DI | 01 | | | B | 27 | 05 | 27 | 05 | | | | | Y | | 3429 | 41 | 2 |

Column positions: 003, 006, 007, 039, 040, 043, 045, 047, 048, 051, 053, 055, 057, 065, 066, 067, 071, 072, 075, 078, 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 4 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK / USAGE | MN SO G. | NM OS /G WDS/ | SOFIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | DATA VALUE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 291 | 106 | Ampoule Alignment Not Extended | DI | 01 | | | B | 27 | 06 | 27 | 06 | | | | | | Y | | 3430 | 41 | 2 |
| 292 | 106 | Ampoule Alignment Extended | DI | 01 | | | B | 27 | 07 | 27 | 07 | | | | | | Y | | 3431 | 41 | 2 |
| 293 | 106 | Ampoule Align Mtr RCCB Off Stat | DI | 01 | | | B | 27 | 08 | 27 | 08 | | | | | | Y | | 3432 | 41 | 2 |
| 294 | 106 | Ampoule Align Mtr RCCB On Stat | DI | 01 | | | B | 27 | 09 | 27 | 09 | | | | | | Y | | 3433 | 41 | 2 |
| 295 | 106 | Ampoule Support Not Retracted | DI | 01 | | | B | 27 | 10 | 27 | 10 | | | | | | Y | | 3434 | 41 | 2 |
| 296 | 106 | Ampoule Support Retracted | DI | 01 | | | B | 27 | 11 | 27 | 11 | | | | | | Y | | 3435 | 41 | 2 |
| 297 | 106 | Ampoule Support Not Secure | DI | 01 | | | B | 27 | 12 | 27 | 12 | | | | | | Y | | 3436 | 41 | 2 |
| 298 | 106 | Ampoule Support Secure | DI | 01 | | | B | 27 | 13 | 27 | 13 | | | | | | Y | | 3437 | 41 | 2 |
| 299 | 106 | Ampoule Spt Plt Mtr RCCB Off St | DI | 01 | | | B | 27 | 14 | 27 | 14 | | | | | | Y | | 3438 | 41 | 2 |
| 300 | 106 | Ampoule Spt Plt Mtr RCCB On Stat | DI | 01 | | | B | 27 | 15 | 27 | 15 | | | | | | Y | | 3439 | 41 | 2 |
| 301 | 106 | Cold Guard Mod RCCB Off Status | DI | 01 | | | B | 28 | 00 | 28 | 00 | | | | | | Y | | 3256 | 41 | 2 |
| 302 | 106 | Cold Guard Mod RCCB On Status | DI | 01 | | | B | 28 | 01 | 28 | 01 | | | | | | Y | | 3257 | 41 | 2 |
| 303 | 106 | Carousel Spacer Plt Gap Lim-Not | DI | 01 | | | B | 28 | 02 | 28 | 02 | | | | | | Y | | 3440 | 41 | 2 |
| 304 | 106 | Carousel Spacer Plt Gap Limit | DI | 01 | | | B | 28 | 03 | 28 | 03 | | | | | | Y | | 3441 | 41 | 2 |
| 305 | 106 | Indexing Cam Not Stowed | DI | 01 | | | B | 28 | 04 | 28 | 04 | | | | | | Y | | 3442 | 41 | 2 |
| 306 | 106 | Indexing Cam Stowed | DI | 01 | | | B | 28 | 05 | 28 | 05 | | | | | | Y | | 3443 | 41 | 2 |
| 307 | 106 | Carousel Trk Extr Left Lim-Not | DI | 01 | | | B | 28 | 06 | 28 | 06 | | | | | | Y | | 3444 | 41 | 2 |
| 308 | 106 | Carousel Trk Extr Left Limit | DI | 01 | | | B | 28 | 07 | 28 | 07 | | | | | | Y | | 3445 | 41 | 2 |
| 309 | 106 | Carousel Trk Extr Right Lim-Not | DI | 01 | | | B | 28 | 08 | 28 | 08 | | | | | | Y | | 3446 | 41 | 2 |
| 310 | 106 | Carousel Trk Extr Right Lim | DI | 01 | | | B | 28 | 09 | 28 | 09 | | | | | | Y | | 3447 | 41 | 2 |
| 311 | 106 | Hot Main Red Mod B RCCB Off Stat | DI | 01 | | | B | 28 | 10 | 28 | 10 | | | | | | Y | | 3258 | 41 | 2 |
| 312 | 106 | Hot Main Red Mod B RCCB On Stat | DI | 01 | | | B | 28 | 11 | 28 | 11 | | | | | | Y | | 3259 | 41 | 2 |
| 313 | 106 | SEM Index Motor RCCB Off Status | DI | 01 | | | B | 28 | 12 | 28 | 12 | | | | | | Y | | 3448 | 41 | 2 |
| 314 | 106 | SEM Index Motor RCCB On Status | DI | 01 | | | B | 28 | 13 | 28 | 13 | | | | | | Y | | 3449 | 41 | 2 |
| 315 | 106 | SEM Indexing Jog CCW Status | DI | 01 | | | B | 28 | 14 | 28 | 14 | | | | | | Y | | 3450 | 41 | 2 |
| 316 | 106 | SEM Indexing Jog CW Status | DI | 01 | | | B | 28 | 15 | 28 | 15 | | | | | | Y | | 3451 | 41 | 2 |
| 317 | 106 | Ampoule Not Processing | DI | 01 | | | B | 29 | 00 | 29 | 00 | | | | | | Y | | 3452 | 41 | 2 |
| 318 | 106 | Ampoule Processing | DI | 01 | | | B | 29 | 01 | 29 | 01 | | | | | | Y | | 3453 | 41 | 2 |
| 319 | 106 | System Bus Relay Off Status | DI | 01 | | | B | 29 | 02 | 29 | 02 | | | | Y | | Y | | 3454 | 41 | 2 |
| 320 | 106 | System Bus Relay On Status | DI | 01 | | | B | 29 | 03 | 29 | 03 | | | | Y | | Y | | 3455 | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 5 of 38)

| ENT NO. | CONR. | DESCRIPTION | CMD/ULK | USAGE | MN SOG. | NM OS /G/ WDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 321 | 106 | Peltier Pulsing Drv RCCB Off St | | DI | 01 | | | B | 29 | 04 | 29 | 04 | | | | | | Y | | 3260 | 41 | 2 |
| 322 | 106 | Peltier Pulsing Drv RCCB On Stat | | DI | 01 | | | B | 29 | 05 | 29 | 05 | | | | | | Y | | 3261 | 41 | 2 |
| 001 | 850 | Sync | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 002 | 850 | Frame Count (SFID) | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 850 | Spacelab Experiment ID | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 004 | 850 | Sample Number (Mode) | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 005 | 850 | Mission ID | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 006 | 850 | Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 007 | 850 | Furnace Position Home | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 008 | 850 | Furn Extreme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 009 | 850 | Furn Extreme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 010 | 850 | Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 011 | 850 | Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 012 | 850 | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 013 | 850 | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 014 | 850 | Water Outlet Valve Normal Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 015 | 850 | Water Outlet Valve Bypass Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 016 | 850 | Water Inlet Valve Normal Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 017 | 850 | Water Inlet Valve Bypass Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 018 | 850 | Vacuum Vent Valve Open Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 019 | 850 | Vacuum Vent Valve Closed Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 020 | 850 | Argon Fill Valve Open Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 021 | 850 | Argon Fill Valve Closed Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 022 | 850 | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 023 | 850 | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 024 | 850 | Ampoule Alignment Not Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 025 | 850 | Ampoule Alignment Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 026 | 850 | Ampoule Alignment Not Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 027 | 850 | Ampoule Alignment Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 028 | 850 | SEM Indexing Jog,CCW Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 6 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G WDS/ | SO FIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 850 | | SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 030 | 850 | | Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 031 | 850 | | Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 032 | 850 | | Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 033 | 850 | | Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 034 | 850 | | Peltier Connector Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 035 | 850 | | Peltier Connector Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 036 | 850 | | Peltier Connector Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 037 | 850 | | Peltier Connector Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 038 | 850 | | Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 039 | 850 | | Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 040 | 850 | | Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 041 | 850 | | Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 042 | 850 | | Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 043 | 850 | | Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 044 | 850 | | Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 045 | 850 | | Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 046 | 850 | | PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 047 | 850 | | PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 048 | 850 | | IFEA ABS Press 2 RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 049 | 850 | | IFEA ABS Press 2 RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 050 | 850 | | Spare RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 051 | 850 | | Spare RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 052 | 850 | | IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 053 | 850 | | SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 054 | 850 | | Cartridge 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 055 | 850 | | Cartridge 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 056 | 850 | | Cartridge 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 057 | 850 | | Cartridge 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 058 | 850 | | Ampoule 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | | |
| 003 | 006 | 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 7 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD BULK | USAGE | MN SOG. | NM OS /G W D S / | SOFIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA TYPE | DATA VALUE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 059 | 850 | | Ampoule 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 060 | 850 | | Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 061 | 850 | | Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 062 | 850 | | Water Outlet Vlv RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 063 | 850 | | Water Outlet Vlv RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 064 | 850 | | Vacuum Vent Vlv RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 065 | 850 | | Vacuum Vent Vlv RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 066 | 850 | | SEM Index Motor RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 067 | 850 | | SEM Index Motor RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 068 | 850 | | Core HD Motor RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 069 | 850 | | Core HD Motor RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 070 | 850 | | Hot Boost Mod A RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 071 | 850 | | Hot Boost Mod A RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 072 | 850 | | Hot Boost Mod B RCCB Off Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 073 | 850 | | Hot Boost Mod B RCCB On Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 074 | 850 | | Cold Main Prim Mod RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 075 | 850 | | Cold Main Prim Mod RCCB On Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 076 | 850 | | HotMain Prim Mod A RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 077 | 850 | | HotMain Prim Mod A RCCB On Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 078 | 850 | | Carousel Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 079 | 850 | | Carousel Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 080 | 850 | | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 081 | 850 | | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 082 | 850 | | Carousel Trk Extr Left Lim-Not | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 083 | 850 | | Carousel Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 084 | 850 | | Carousel Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 085 | 850 | | Carousel Spacer Plt Gap Limit | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 086 | 850 | | Ampoule Spt Plt Mtr RCCB Off St | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 087 | 850 | | Ampoule Spt Plt Mtr RCCB On Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 088 | 850 | | Ampoule Align Mtr RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 8 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD/ULK | USAGE | MNSOG. | NMOS/G WDS/ | SOP FIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COEF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 089 | 850 | Ampoule Align Mtr RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 090 | 850 | Water Inlet Valve RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 091 | 850 | Water Inlet Valve RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 092 | 850 | Argon Fill Valve RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 093 | 850 | Argon Fill Valve RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 094 | 850 | System Bus Relay Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 095 | 850 | System Bus Relay On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 096 | 850 | IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 097 | 850 | PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 098 | 850 | Cartridge 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 099 | 850 | Cartridge 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 100 | 850 | Cartridge 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 101 | 850 | Cartridge 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 102 | 850 | Cartridge 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 103 | 850 | Cartridge 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 104 | 850 | Cartridge 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 105 | 850 | Cartridge 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 106 | 850 | PCS Utility RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 107 | 850 | PCS Utility RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 108 | 850 | Step Motor Drive RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 109 | 850 | Step Motor Drive RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 110 | 850 | IFEA ABS Press 1 RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 111 | 850 | IFEA ABS Press 1 RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 112 | 850 | Peltier Conn Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 113 | 850 | Peltier Conn Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 114 | 850 | Step Motor Clutch RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 115 | 850 | Step Motor Clutch RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 116 | 850 | Rapid Xlation Clutch RCCB Off St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 117 | 850 | Rapid Xlation Clutch RCCB On St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 118 | 850 | Rapid Xlation Mtr RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 9 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | S O FIXD | TYPE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 850 | Rapid Xlation Mtr RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 120 | 850 | Fail Safe Brake RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 121 | 850 | Fail Safe Brake RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 122 | 850 | Cold Main Red Mod RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 123 | 850 | Cold Main Red Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 124 | 850 | Hot Main Prim Mod. B RCCB Off Sta | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 125 | 850 | Hot Main Prim Mod B RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 126 | 850 | Hot Guard Module RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 127 | 850 | Hot Guard Module RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 128 | 850 | Mech Pulsing Mod RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 129 | 850 | Mech Pulsing Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 130 | 850 | Hot Main Red Mod A RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 131 | 850 | Hot Main Red Mod A RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 132 | 850 | Cold Guard Mod RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 133 | 850 | Cold Guard Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 134 | 850 | Hot Main Red Mod B RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 135 | 850 | Hot Main Red Mod B RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 136 | 850 | Peltier Pulsing Drv RCCB Off St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 137 | 850 | Peltier Pulsing Drv RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 138 | 850 | Sample to Process #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 139 | 850 | Sample to Process #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 140 | 850 | Sample to Process #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 141 | 850 | Sample to Process #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 142 | 850 | Sample to Process #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 143 | S850 | ample to Process #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 144 | 850 | Processed Sample #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 145 | 850 | Processed Sample #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 146 | 850 | Processed Sample #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 147 | 850 | Processed Sample #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 148 | 850 | Processed Sample #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

```
0   0 0   3 4   4   4   4 4   5   5   5   5   6 6 6   7 7   7   7   8
?   6 7   9 0   3   5   7 8   1   3   5   7   5 6 7   1 2   5   8   0
```

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 10 of 38)

| ENT NO. | CORR. | NO. . | DESCRIPTION | CMD BULK | USAGE | MNSO G. | NMSO /G WDS/ | SOFIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 149 | 850 | | Processed Sample #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 150 | 850 | | Last Sample Index | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 151 | 850 | | GMT Day | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 152 | 850 | | GMT Milliseconds of Day | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 153 | 850 | | GMT Fractional Milliseconds | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 154 | 850 | | Last Command Received Word #0 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 155 | 850 | | Last Command Received Word #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 156 | 850 | | Last Command Received Word #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 157 | 850 | | Last Command Received Word #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 158 | 850 | | Last Command Received Word #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 159 | 850 | | Last Command Received Word #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 160 | 850 | | Last Command Received Word #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 161 | 850 | | Last Command Received Word #7 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 162 | 850 | | Last Command Received Word #8 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 163 | 850 | | Last Command Received Word #9 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 164 | 850 | | Last Command Received Word #10 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 165 | 850 | | Last Command Received Word #11 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 166 | 850 | | Last Command Received Word #12 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 167 | 850 | | Last Command Received Word #13 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 168 | 850 | | Last Command Received Word #14 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 169 | 850 | | Last Command Received Word #15 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 170 | 850 | | Last Command Received Word #16 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 171 | 850 | | Last Command Received Word #17 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 172 | 850 | | Last Command Received Word #18 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 173 | 850 | | Last Command Received Word #19 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 174 | 850 | | Last Command Received Word #20 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 175 | 850 | | Last Command Received Word #21 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 176 | 850 | | Last Command Received Word #22 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 177 | 850 | | Last Command Received Word #23 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 178 | 850 | | Last Command Received Word #24 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 11 of 38)

| ENT NO. | CONO R R . | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 179 | 850 | Last Command Received Word #25 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 180 | 850 | Last Command Received Word #26 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 181 | 850 | Last Command Received Word #27 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 182 | 850 | Last Command Received Word #28 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 183 | 850 | Last Command Received Word #29 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 184 | 850 | Last Command Received Word #30 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 185 | 850 | Last Command Received Word #31 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 186 | 850 | Invalid Command Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 187 | 850 | User Requested Data | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 188 | 850 | ECS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 189 | 850 | FTS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 190 | 850 | FHS Cold Guard Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 191 | 850 | FHS Cold Zone Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 192 | 850 | FHS Booster Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 193 | 850 | FHS Hot Zone Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 194 | 850 | FHS Hot Guard Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 195 | 850 | SIDS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 196 | 850 | ECS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 197 | 850 | ECS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 198 | 850 | FTS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 199 | 850 | FTS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 200 | 850 | FHS Cold Guard Cur Seg Start Tim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 201 | 850 | FHS Cold Guard Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 202 | 850 | FHS Cold Zone Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 203 | 850 | FHS Cold Zone Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 204 | 850 | FHS Booster Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 205 | 850 | FHS Booster Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 206 | 850 | FHS Hot Zone Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 207 | 850 | FHS Hot Zone Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 208 | 850 | FHS Hot Guard Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 12 of 38)

| ENT NO. | CORR. | NO. DESCRIPTION | CMD/UL/K | USAGE | MN SOG. | NM OS/G WDS/ | SOY IXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXEC | CAL. COEF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | 850 | FHS Hot Guard Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 210 | 850 | SIDS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 211 | 850 | SIDS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 212 | 850 | Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 213 | 850 | Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 214 | 850 | IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 215 | 850 | IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 216 | 850 | IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 217 | 850 | IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 218 | 850 | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 219 | 850 | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 220 | 850 | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 221 | 850 | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 222 | 850 | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 223 | 850 | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 224 | 850 | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 225 | 850 | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 226 | 850 | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 227 | 850 | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 228 | 850 | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 229 | 850 | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 230 | 850 | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 231 | 850 | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 232 | 850 | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 233 | 850 | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 234 | 850 | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 235 | 850 | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 236 | 850 | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 237 | 850 | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 238 | 850 | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | | |

003 006 007 039 040 043 045 047 048 051 053 055 57 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 13 of 38)

| ENT NO. | COR R. | N O. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G WDS/ | SO FIXD | TYPE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 239 | 850 | | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | | |
| 240 | 850 | | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 241 | 350 | | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 242 | 850 | | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 243 | 850 | | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 244 | 850 | | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 245 | 850 | | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 246 | 850 | | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 247 | 850 | | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 248 | 850 | | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 249 | 850 | | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 250 | 850 | | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 251 | 850 | | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 252 | 850 | | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 253 | 850 | | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 254 | 850 | | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 255 | 850 | | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 256 | 850 | | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 257 | 850 | | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 258 | 850 | | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 259 | 850 | | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 260 | 850 | | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 261 | 850 | | Stepping Motor Phase A Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 262 | 850 | | Stepping Motor Phase A Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 263 | 850 | | Stepping Motor Phase B Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 264 | 850 | | Stepping Motor Phase B Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 265 | 850 | | Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 266 | 850 | | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 267 | 850 | | Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 268 | 850 | | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| | | | | | | | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

## TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 14 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD/UL/K | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL COEF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 269 | 850 | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 270 | 850 | Cold Main Primary Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 271 | 850 | Cold Main Primary Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 272 | 850 | Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 273 | 850 | Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 274 | 850 | Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 275 | 850 | Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 276 | 850 | Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 277 | 850 | Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 278 | 850 | Hot Main Primary Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 279 | 850 | Hot Main Primary Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 280 | 850 | Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 281 | 850 | Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 282 | 850 | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 283 | 850 | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 284 | 850 | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 285 | 850 | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 286 | 850 | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 287 | 850 | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 288 | 850 | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 289 | 850 | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 290 | 850 | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 291 | 850 | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 292 | 850 | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 293 | 850 | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 294 | 850 | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 295 | 850 | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 296 | 850 | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 297 | 850 | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 298 | 850 | Booster Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 15 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 299 | 850 | Booster Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 300 | 850 | Cold Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 301 | 850 | Cold Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 302 | 850 | Cold Main Prim Htr Cntrl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 303 | 850 | Cold Main Prim Htr Cntrl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 304 | 850 | Cold Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 305 | 850 | Cold Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 306 | 850 | Hot Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 307 | 850 | Hot Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 308 | 850 | Hot Main Prim Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 309 | 850 | Hot Main Prim Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 310 | 850 | Hot Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 311 | 850 | Hot Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 312 | 850 | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 313 | 850 | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 314 | 850 | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 315 | 850 | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 316 | 850 | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 317 | 850 | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 318 | 850 | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 319 | 850 | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 320 | 850 | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 321 | 850 | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 322 | 850 | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 323 | 850 | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 324 | 850 | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 325 | 850 | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 326 | 850 | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 327 | 850 | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 328 | 850 | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 16 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD LK | USAGE | MN SOG. | NM OS /G W D S / | SOFIX D | TYPE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXEC | CAL. COEF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 329 | 850 | | RTD Mux 8 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 330 | 850 | | RTD Mux 8 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 331 | 850 | | TC Group A Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 332 | 850 | | TC Group A Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 333 | 850 | | TC Group A Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 334 | 850 | | TC Group B Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 335 | 850 | | TC Group B Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 336 | 850 | | TC Group B Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 337 | 850 | | TC Group C Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 338 | 850 | | TC Group C Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 339 | 850 | | TC Group C Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 340 | 850 | | TC Group D Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 341 | 850 | | TC Group D Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 342 | 850 | | TC Group D Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 343 | 850 | | SMS Board Velocity Reading | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 344 | 850 | | Cold Guard Zone CJ Blck Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 345 | 850 | | Cold Main CJ Block Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 346 | 850 | | Booster Zone CJ Block Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 347 | 850 | | Hot Main Zone CJ Block Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 348 | 850 | | Hot Guard Zone CJ Block Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 349 | 850 | | Total Calculated Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 350 | 850 | | Cold Guard Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 351 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 352 | 850 | | Cold Main Prim Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 353 | 850 | | Cold Main Red Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 354 | 850 | | Booster Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 355 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 356 | 850 | | Hot Main Prim Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 357 | 850 | | Hot Main Red Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 358 | 850 | | Hot Guard Htr Cmd Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 006 | 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 17 of 38)

| ENT NO. | COR R. | NO. | DESCRIPTION | CMD ULK | USAGE | MNSO G. | NMOS/G WDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 359 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 360 | 850 | | Cold Guard Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 361 | 850 | | Cold Main Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 362 | 850 | | Booster Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 363 | 850 | | Hot Main Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 364 | 850 | | Hot Guard Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 365 | 850 | | Cold Guard Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 366 | 850 | | Cold Guard Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 367 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 368 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 369 | 850 | | Cold Main Prim Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 370 | 850 | | Cold Main Prim Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 371 | 850 | | Cold Main Red Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 372 | 850 | | Cold Main Red Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 373 | 650 | | Booster Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 374 | 850 | | Booster Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 375 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 376 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 377 | 850 | | Hot Main Prim Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 378 | 850 | | Hot Main Prim Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 379 | 850 | | Hot Main Red Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 380 | 850 | | Hot Main Red Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 381 | 850 | | Hot Guard Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 382 | 850 | | Hot Guard Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 383 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 384 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 385 | 850 | | Cold Guard Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 386 | 850 | | Cold Main Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 387 | 850 | | Booster Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 388 | 850 | | Hot Main Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 18 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD/UL K | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. CONF | CDT ? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 389 | 850 | Hot Guard Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 390 | 850 | Cold Guard Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 391 | 850 | Cold Main Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 392 | 850 | Booster Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 393 | 850 | Hot Main Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 394 | 850 | Hot Guard Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 395 | 850 | Cold Guard Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 396 | 850 | Cold Main Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 397 | 850 | Booster Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 398 | 850 | Hot Main Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 399 | 850 | Hot Guard Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 400 | 850 | Cold Guard Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 401 | 850 | Cold Main Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 402 | 850 | Booster Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 403 | 850 | Hot Main Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 404 | 850 | Hot Guard Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 405 | 850 | Cold Guard Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 406 | 850 | Cold Main Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 407 | 850 | Booster Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 408 | 850 | Hot Main Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 409 | 850 | Hot Guard Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 410 | 850 | Cold Guard Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 411 | 850 | Cold Main Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 412 | 850 | Booster Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 413 | 850 | Hot Main Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 414 | 850 | Hot Guard Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 415 | 850 | Cold Guard Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 416 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 417 | 850 | Cold Main Prim Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 418 | 850 | Cold Main Red Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | | |

Column positions: 003, 006, 007, 039, 040, 043, 045, 047, 048, 051, 053, 055, 057, 065, 066, 067, 071, 072, 075, 078, 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 19 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMDULK | USAGE | MN SO G. | NM OS /G/ W D S / | SO FIXD | TY PE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL.COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 419 | 850 | | Booster Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 420 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 421 | 850 | | Hot Main Prim Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 422 | 850 | | Hot Main Red Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 423 | 850 | | Hot Guard Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 424 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 425 | 850 | | Cold Guard Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 426 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 427 | 850 | | Cold Main Prim Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 428 | 850 | | Cold Main Red Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 429 | 850 | | Booster Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 430 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 431 | 850 | | Hot Main Prim Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 432 | 850 | | Hot Main Red Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 433 | 850 | | Hot Guard Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 434 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 435 | 850 | | Cold Guard Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 436 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 437 | 850 | | ColdMain Prim Htr Calc Resistnce | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 438 | 850 | | ColdMain Red Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 439 | 850 | | Booster Htr Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 440 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 441 | 850 | | HOTMain Prim Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 442 | 850 | | Hot Main Red Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 443 | 850 | | Hot Guard Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 444 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 445 | 850 | | Cold Guard Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 446 | 850 | | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 447 | 850 | | Cold Main Prim Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 448 | 850 | | Cold Main Red Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 003, 006, 007, 039, 040, 043, 045, 047, 048, 051, 053, 055, 057, 065, 066, 067, 071, 072, 075, 078, 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 20 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD UL K | USAGE | MN SO G. | NM OS /G/ WDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 449 | 850 | Booster Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 450 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 451 | 850 | Hot Main Prim Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 452 | 850 | Hot Main Red Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 453 | 850 | Hot Guard Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 454 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 455 | 850 | Cold Guard Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 456 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 457 | 850 | Cold Main Prim Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 458 | 850 | Cold Main Red Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 459 | 850 | Booster Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 460 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 461 | 850 | Hot Main Prim Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 462 | 850 | Hot Main Red Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 463 | 850 | Hot Guard Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 464 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 465 | 850 | Cold Guard Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 466 | 850 | Cold Main Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 467 | 850 | Booster Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 468 | 850 | Hot Main Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 469 | 850 | Hot Guard Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 470 | 850 | Integral Power Fault Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 471 | 850 | Fault Sum Delta Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 472 | 850 | Fault Integral Gain | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 473 | 850 | Fault Proportional Gain | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 474 | 850 | Fault Intermediate Calc. Value 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 475 | 850 | Fault Intermediate Calc. Value 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 476 | 850 | Fault Delta Power - Previous | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 477 | 850 | Fault Delta Power - 2nd Previous | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 478 | 850 | Faulted Zone | | | 02 | | | | | | | | | | | | | | | | |
| 003 | 006 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 21 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MNSO G. | NMOS /G W D S / | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 479 | 850 | | Integral Gain Array 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 480 | 850 | | Integral Gain Array 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 481 | 850 | | Integral Gain Array 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 482 | 850 | | Integral Gain Array 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 483 | 850 | | Integral Gain Array 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 484 | 850 | | Proportional Gain Array 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 485 | 850 | | Proportional Gain Array 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 486 | 850 | | Proportional Gain Array 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 487 | 850 | | Proportional Gain Array 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 488 | 850 | | Proportional Gain Array 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 489 | 850 | | FF Ampoule Align Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 490 | 850 | | FF Ampoule Align Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 491 | 850 | | FF Ampoule Align Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 492 | 850 | | FF Ampoule Align Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 493 | 850 | | FF Car Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 494 | 850 | | FF Car Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 495 | 850 | | FF Car Trk Extr Left Limit-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 496 | 850 | | FF Car Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 497 | 850 | | FF Car Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 498 | 850 | | FF Car Spacer Plt Gap Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 499 | 850 | | FF Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 500 | 850 | | FF Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 501 | 850 | | FF Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 502 | 850 | | FF Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 503 | 850 | | FF SEM Index Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 504 | 850 | | FF SEM Index Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 505 | 850 | | FF Fail Safe Brake RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 506 | 850 | | FF Fail Safe Brake RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 507 | 850 | | FF Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 508 | 850 | | FF Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

## TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 22 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MNSOG. | NMOS/GWDS/ | SOFIXD | TYPE | START WD# | START BT# | END WD# | END BT# | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. CONF | CDT? | RC IODE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 509 | 850 | FF | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 510 | 850 | FF | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 511 | 850 | FF | Core HD Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 512 | 850 | FF | Core HD Motor RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 513 | 850 | FF | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 514 | 850 | FF | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 515 | 850 | FF | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 516 | 850 | FF | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 517 | 850 | FF | Ampoule Spt Plt Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 518 | 850 | FF | Ampoule Spt Plt Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 519 | 850 | FF | Ampoule Align Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 520 | 850 | FF | Ampoule Align Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 521 | 850 | FF | PCS Utility RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 522 | 850 | FF | PCS Utility RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 523 | 850 | FF | System Bus Relay Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 524 | 850 | FF | System Bus Relay On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 525 | 850 | FF | Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 526 | 850 | FF | Furnace Position Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 527 | 850 | FF | Furn Extrme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 528 | 850 | FF | Furn Extreme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 529 | 850 | FF | Step Motor Drive RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 530 | 850 | FF | Step Motor Drive RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 531 | 850 | FF | Step Motor Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 532 | 850 | FF | Step Motor Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 533 | 850 | FF | Rapid Xlation Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 534 | 850 | FF | Rapid Xlation Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 535 | 850 | FF | Rapid Xlation Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 536 | 850 | FF | Rapid Xlation Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 537 | 850 | FF | Water Inlet Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 538 | 850 | FF | Water Inlet Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 23 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MNSO G. | NMOS /G WDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 539 | 850 | FF | Vacuum Vent Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 540 | 850 | FF | Vacuum Vent Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 541 | 850 | FF | Vacuum Vent Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 542 | 850 | FF | Vacuum Vent Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 543 | 850 | FF | IFEA ABS Press 2 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 544 | 850 | FF | IFEA ABS Press 2 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 545 | 850 | FF | IFEA ABS Press 1 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 546 | 850 | FF | IFEA ABS Press 1 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 547 | 850 | FF | Argon Fill Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 548 | 850 | FF | Argon Fill Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 549 | 850 | FF | Argon Fill Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 550 | 850 | FF | Argon Fill Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 551 | 850 | FF | SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 552 | 850 | FF | SEM Indexing Jog CCW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 553 | 850 | FF | Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 554 | 850 | FF | Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 555 | 850 | FF | Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 556 | 850 | FF | Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 557 | 850 | FF | Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 558 | 850 | FF | Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 559 | 850 | FF | Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 560 | 850 | FF | Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 561 | 850 | FF | Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 562 | 850 | FF | Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 563 | 850 | FF | Water Outlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 564 | 850 | FF | Water Outlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 565 | 850 | FF | Water Outlet Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 566 | 850 | FF | Water Outlet Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 567 | 850 | FF | Water Inlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 568 | 850 | FF | Water Inlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 24 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD UL K | USAGE | MN SO G. | NM OS /G WD S/ | SO FIX D | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 569 | 850 | FF | Mech Pulsing Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 570 | 850 | FF | Mech Pulsing Mod RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 571 | 850 | FF | Cartridge 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 572 | 850 | FF | Cartridge 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 573 | 850 | FF | Cartridge 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 574 | 850 | FF | Cartridge 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 575 | 850 | FF | Cartridge 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 576 | 850 | FF | Cartridge 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 577 | 850 | FF | Cartridge 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 578 | 850 | FF | Cartridge 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 579 | 850 | FF | Cartridge 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 580 | 850 | FF | Cartridge 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 581 | 850 | FF | Cartridge 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 582 | 850 | FF | Cartridge 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 583 | 850 | FF | Ampoule 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 584 | 850 | FF | Ampoule 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 585 | 850 | FF | Hot Boost Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 586 | 850 | FF | Hot Boost Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 587 | 850 | FF | Cold Main Red Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 588 | 850 | FF | Cold Main Red Mod RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 589 | 850 | FF | Cold Main Prim Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 590 | 850 | FF | Cold Main Prim Mod RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 591 | 850 | FF | Cold Guard Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 592 | 850 | FF | Cold Guard Mod RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 593 | 850 | FF | Peltier Conn Retracted-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 594 | 850 | FF | Peltier Conn Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 595 | 850 | FF | Peltier Conn Extended-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 596 | 850 | FF | Peltier Conn Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 597 | 850 | FF | Peltier Conn Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 598 | 850 | FF | Peltier Conn Motor RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

0 0 0 3 4 4 4 4 4 5 5 5 5 6 6 6 7 7 7 7 8
3 6 7 9 0 3 5 7 8 1 3 5 7 5 6 7 1 2 5 8 0

TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 25 of 38)

| ENT NO. | CORR. | CON O. | DESCRIPTION | CMD/UL/K | USAGE | MN SO G. | NM OS /G W D S / | S O F I X D | TYPE | START WD # | START BT | END WD # | END BT | DATA TYPE | DATA VALUE | MON EVENT | REQ EXEC | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 599 | 850 | FF | Peltier Pulsing Drv RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 600 | 850 | FF | Peltier Pulsing Drv RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 601 | 850 | FF | SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 602 | 850 | FF | PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 603 | 850 | FF | PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 604 | 850 | FF | PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 605 | 850 | FF | Hot Main Red Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 606 | 850 | FF | Hot Main Red Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 607 | 850 | FF | Hot Main Red Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 608 | 850 | FF | Hot Main Red Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 609 | 850 | FF | Hot Main Prim Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 610 | 850 | FF | Hot Main Prim Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 611 | 850 | FF | HotMain Prim Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 612 | 850 | FF | HotMain Prim Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 613 | 850 | FF | Hot Guard Module RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 614 | 850 | FF | Hot Guard Module RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 615 | 850 | FF | Hot Boost Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 616 | 850 | FF | Hot Boost Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 617 | 850 | FF | Hot Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 618 | 850 | FF | Cold Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 619 | 850 | FF | TC Group A Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 620 | 850 | FF | TC Group A Calibration Type S | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 621 | 850 | FF | TC Group A Calibration Type K | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 622 | 850 | FF | Cold Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 623 | 850 | FF | Cold Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 624 | 850 | FF | Booster Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 625 | 850 | FF | Hot Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 626 | 850 | FF | Hot Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 627 | 850 | FF | Hot Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 628 | 850 | FF | TC Group B Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 26 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMDULK | USAGE | MN SO G. | NM OS /G W D S / | SO P FIXD | TY PE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXC | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 629 | 850 | FF | TC Group B Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 630 | 850 | FF | TC Group B Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 631 | 850 | FF | IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 632 | 850 | FF | IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 633 | 850 | FF | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 634 | 850 | FF | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 635 | 850 | FF | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 636 | 850 | FF | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 637 | 850 | FF | Cold Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 638 | 850 | FF | TC Group D Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 639 | 850 | FF | TC Group D Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 640 | 850 | FF | TC Group D Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 641 | 850 | FF | Cold Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 642 | 850 | FF | Cold Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 643 | 850 | FF | Booster Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 644 | 850 | FF | Hot Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 645 | 850 | FF | TC Group C Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 646 | 850 | FF | TC Group C Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 647 | 850 | FF | TC Group C Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 648 | 850 | FF | Hot Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 649 | 850 | FF | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 650 | 850 | FF | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 651 | 850 | FF | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 652 | 850 | FF | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 653 | 850 | FF | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 654 | 850 | FF | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 655 | 850 | FF | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 656 | 850 | FF | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 657 | 850 | FF | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 658 | 850 | FF | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 27 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL COEF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 659 | 850 | FF | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 660 | 850 | FF | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 661 | 850 | FF | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 662 | 850 | FF | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 663 | 850 | FF | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 664 | 850 | FF | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 665 | 850 | FF | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 666 | 850 | FF | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 667 | 850 | FF | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 668 | 850 | FF | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 669 | 850 | FF | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 670 | 850 | FF | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 671 | 850 | FF | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 672 | 850 | FF | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 673 | 850 | FF | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 674 | 850 | FF | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 675 | 850 | FF | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 676 | 850 | FF | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 677 | 850 | FF | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 678 | 850 | FF | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 679 | 850 | FF | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 680 | 850 | FF | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 681 | 850 | FF | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 682 | 850 | FF | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 683 | 850 | FF | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 684 | 850 | FF | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 685 | 850 | FF | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 686 | 850 | FF | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 687 | 850 | FF | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 688 | 850 | FF | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 28 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMDULK | USAGE | MNSOG. | NMOS/G WDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COEF | CRC DT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 689 | 850 | FF | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 690 | 850 | FF | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 691 | 850 | FF | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 692 | 850 | FF | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 693 | 850 | FF | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 694 | 850 | FF | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 695 | 850 | FF | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 696 | 850 | FF | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 697 | 850 | FF | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 698 | 850 | FF | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 699 | 850 | FF | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 700 | 850 | FF | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 701 | 850 | FF | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 702 | 850 | FF | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 703 | 850 | FF | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 704 | 850 | FF | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 705 | 850 | FF | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 706 | 850 | FF | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 707 | 850 | FF | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 708 | 850 | FF | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 709 | 850 | FF | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 710 | 850 | FF | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 711 | 850 | FF | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 712 | 850 | FF | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 713 | 850 | FF | Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 714 | 850 | FF | Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 715 | 850 | FF | Cold Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 716 | 850 | FF | Cold Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 717 | 850 | FF | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 718 | 850 | FF | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 29 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD UL K | USAGE | MN SO G. | NM OS /G WDS/ | SO P FIXD | TY PE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 719 | 850 | FF | RTD Mux 8 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 720 | 850 | FF | RTD Mux 8 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 721 | 850 | FF | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 722 | 850 | FF | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 723 | 850 | FF | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 724 | 850 | FF | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 725 | 850 | FF | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 726 | 850 | FF | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 727 | 850 | FF | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 728 | 850 | FF | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 729 | 850 | FF | IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 730 | 850 | FF | Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 731 | 850 | FF | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 732 | 850 | FF | Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 733 | 850 | FF | Stepping Motor Phase B Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 734 | 850 | FF | Stepping Motor Phase B Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 735 | 850 | FF | Stepping Motor Phase A Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 736 | 850 | FF | Stepping Motor Phase A Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 737 | 850 | FF | Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 738 | 850 | FF | Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 739 | 850 | FF | Hot Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 740 | 850 | FF | Hot Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 741 | 850 | FF | Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 742 | 850 | FF | Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 743 | 850 | FF | Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 744 | 850 | FF | Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 745 | 850 | FF | SMS Board Velocity Reading | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 746 | 850 | FF | Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 747 | 850 | FF | Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 748 | 850 | FF | IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 30 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD BULK | USAGE | MN SO G. | NM OS /G W D S / | S O FIXD | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXC P | CAL COEF | C D T ? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 749 | 850 | FF | IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 750 | 850 | FF | IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 001 | 851 | RC | SEM Index Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 002 | 851 | RC | SEM Index Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 851 | RC | Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 004 | 851 | RC | Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 005 | 851 | RC | Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 006 | 851 | RC | Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 007 | 851 | RC | Car Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 008 | 851 | RC | Car Spacer Plt Gap Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 009 | 851 | RC | Car Trk Extr Left Limit-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 010 | 851 | RC | Car Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 011 | 851 | RC | Car Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 012 | 851 | RC | Car Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 013 | 851 | RC | Ampoule Align Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 014 | 851 | RC | Ampoule Align Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 015 | 851 | RC | Ampoule Align Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 016 | 851 | RC | Ampoule Align Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 017 | 851 | RC | Ampoule Align Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 018 | 851 | RC | Ampoule Align Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 019 | 851 | RC | Ampoule Spt Plt Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 020 | 851 | RC | Ampoule Spt Plt Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 021 | 851 | RC | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 022 | 851 | RC | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 023 | 851 | RC | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 024 | 851 | RC | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 025 | 851 | RC | Core HD Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 026 | 851 | RC | Core HD Motor RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 027 | 851 | RC | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 028 | 851 | RC | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 31 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMDUL | USAGE | MN SO G. | NM OS /G WDS/ | SO PFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 851 | RC | Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 030 | 851 | RC | Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 031 | 851 | RC | Fail Safe Brake RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 032 | 851 | RC | Fail Safe Brake RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 033 | 851 | RC | Rapid Xlation Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 034 | 851 | RC | Rapid Xlation Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 035 | 851 | RC | Rapid Xlation Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 036 | 851 | RC | Rapid Xlation Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 037 | 851 | RC | Step Motor Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 038 | 851 | RC | Step Motor Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 039 | 851 | RC | Step Motor Drive RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 040 | 851 | RC | Step Motor Drive RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 041 | 851 | RC | Furn Extrme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 042 | 851 | RC | Furn Extrdme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 043 | 851 | RC | Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 044 | 851 | RC | Furnace Position Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 045 | 851 | RC | System Bus Relay Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 046 | 851 | RC | System Bus Relay On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 047 | 851 | RC | PCS Utility RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 048 | 851 | RC | PCS Utility RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 049 | 851 | RC | SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 050 | 851 | RC | SEM Indexing Jog CCW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 051 | 851 | RC | Argon Fill Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 052 | 851 | RC | Argon Fill Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 053 | 851 | RC | Argon Fill Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 054 | 851 | RC | Argon Fill Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 055 | 851 | RC | IFEA ABS Press 1 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 056 | 851 | RC | IFEA ABS Press 1 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 057 | 851 | RC | IFEA ABS Press 2 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 058 | 851 | RC | IFEA ABS Press 2 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

## TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 32 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G /W DS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CALC OF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 059 | 851 | RC Vacuum Vent Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 060 | 851 | RC Vacuum Vent Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 061 | 851 | RC Vacuum Vent Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 062 | 851 | RC Vacuum Vent Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 063 | 851 | RC Water Inlet Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 064 | 851 | RC Water Inlet Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 065 | 851 | RC Water Inlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 066 | 851 | RC Water Inlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 067 | 851 | RC Water Outlet Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 068 | 851 | RC Water Outlet Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 069 | 851 | RC Water Outlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 070 | 851 | RC Water Outlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 071 | 851 | RC Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 072 | 851 | RC Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 073 | 851 | RC Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 074 | 851 | RC Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 075 | 851 | RC Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 076 | 851 | RC Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 077 | 851 | RC Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 078 | 851 | RC Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 079 | 851 | RC Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 080 | 851 | RC Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 081 | 851 | RC Ampoule 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 082 | 851 | RC Ampoule 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 083 | 851 | RC Cartridge 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 084 | 851 | RC Cartridge 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 085 | 851 | RC Cartridge 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 086 | 851 | RC Cartridge 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 087 | 851 | RC Cartridge 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 088 | 851 | RC Cartridge 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 33 of 38)

| ENT NO. | CONR. | NO. | DESCRIPTION | CMD | ULK | USAGE | MN SO G. | NM OS /G/ WD S/ | SO FIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 089 | 851 | RC | Cartridge 4 Failure 2 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 090 | 851 | RC | Cartridge 4 Failure 1 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 091 | 851 | RC | Cartridge 5 Failure 2 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 092 | 851 | RC | Cartridge 5 Failure 1 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 093 | 851 | RC | Cartridge 6 Failure 2 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 094 | 851 | RC | Cartridge 6 Failure 1 Status | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 095 | 851 | RC | Mech Pulsing Mod RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 096 | 851 | RC | Mech Pulsing Mod RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 097 | 851 | RC | Peltier Pulsing Drv RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 098 | 851 | RC | Peltier Pulsing Drv RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 099 | 851 | RC | Peltier Conn Motor RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 100 | 851 | RC | Peltier Conn Motor RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 101 | 851 | RC | Peltier Conn Extended-Not | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 102 | 851 | RC | Peltier Conn Extended | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 103 | 851 | RC | Peltier Conn Retracted-Not | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 104 | 851 | RC | Peltier Conn Retracted | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 105 | 851 | RC | Cold Guard Mod RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 106 | 851 | RC | Cold Guard Mod RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 107 | 851 | RC | Cold Main Prim Mod RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 108 | 851 | RC | Cold Main Prim Mod RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 109 | 851 | RC | Cold Main Red Mod RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 110 | 851 | RC | Cold Main Red Mod RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 111 | 851 | RC | Hot Boost Mod A RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 112 | 851 | RC | Hot Boost Mod A RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 113 | 851 | RC | Hot Boost Mod B RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 114 | 851 | RC | Hot Boost Mod B RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 115 | 851 | RC | Hot Guard Module RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 116 | 851 | RC | Hot Guard Module RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 117 | 851 | RC | HotMain Prim Mod A RCCB Off | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 118 | 851 | RC | HotMain Prim Mod A RCCB On | | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 34 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD UUK | USAGE | MN SO G. | NM OS /G WDS/ | SO P FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 851 | RC | Hot Main Prim Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 120 | 851 | RC | Hot Main Prim Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 121 | 851 | RC | Hot Main Red Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 122 | 851 | RC | Hot Main Red Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 123 | 851 | RC | Hot Main Red Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 124 | 851 | RC | Hot Main Red Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 125 | 851 | RC | PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 126 | 851 | RC | PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 127 | 851 | RC | SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 128 | 851 | RC | PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 129 | 851 | RC | IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 130 | 851 | RC | IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 131 | 851 | RC | TC Group B Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 132 | 851 | RC | TC Group B Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 133 | 851 | RC | Hot Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 134 | 851 | RC | TC Group B Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 135 | 851 | RC | Hot Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 136 | 851 | RC | Hot Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 137 | 851 | RC | Cold Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 138 | 851 | RC | Booster Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 139 | 851 | RC | TC Group A Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 140 | 851 | RC | Cold Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 141 | 851 | RC | TC Group A Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 142 | 851 | RC | TC Group A Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 143 | 851 | RC | Hot Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 144 | 851 | RC | Cold Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 145 | 851 | RC | TC Group C Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 146 | 851 | RC | Hot Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 147 | 851 | RC | TC Group C Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 148 | 851 | RC | TC Group C Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 35 of 38)

| ENT NO. | CORR | NO. | DESCRIPTION | CMD UL K | USAGE | MN SO G. | NM OS /G W D S / | SO FIX D | TYPE | START WD # | START BT | END WD # | END BT | DATA TYPE | DATA VALUE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 149 | 851 | RC | Booster Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 150 | 851 | RC | Hot Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 151 | 851 | RC | Cold Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 152 | 851 | RC | Cold Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 153 | 851 | RC | TC Group D Calibration Type S | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 154 | 851 | RC | TC Group D Calibration Type K | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 155 | 851 | RC | Cold Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 156 | 851 | RC | TC Group D Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 157 | 851 | RC | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 158 | 851 | RC | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 159 | 851 | RC | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 160 | 851 | RC | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 161 | 851 | RC | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 162 | 851 | RC | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 163 | 851 | RC | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 164 | 851 | RC | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 165 | 851 | RC | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 166 | 851 | RC | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 167 | 851 | RC | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 168 | 851 | RC | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 169 | 851 | RC | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 170 | 851 | RC | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 171 | 851 | RC | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 172 | 851 | RC | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 173 | 851 | RC | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 174 | 851 | RC | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 175 | 851 | RC | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 176 | 851 | RC | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 177 | 851 | RC | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 178 | 851 | RC | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 36 of 38)

| ENT NO. | COR R. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SOG. | NM OS/G WDS/ | SO FIX/D | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA TYPE | DATA VALUE | MON REQ EVENT | MON REQ EXC P | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 179 | 851 | RC | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 180 | 851 | RC | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 181 | 851 | RC | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 182 | 851 | RC | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 183 | 851 | RC | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 184 | 851 | RC | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 185 | 851 | RC | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 186 | 851 | RC | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 187 | 851 | RC | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 188 | 851 | RC | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 189 | 851 | RC | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 190 | 851 | RC | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 191 | 851 | RC | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 192 | 851 | RC | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 193 | 851 | RC | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 194 | 851 | RC | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 195 | 851 | RC | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 196 | 851 | RC | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 197 | 851 | RC | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 198 | 851 | RC | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 199 | 851 | RC | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 200 | 851 | RC | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 201 | 851 | RC | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 202 | 851 | RC | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 203 | 851 | RC | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 204 | 851 | RC | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 205 | 851 | RC | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 206 | 851 | RC | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 207 | 851 | RC | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 208 | 851 | RC | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 006 | 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 37 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MNSO G. | NMOS /G/ WDS/ | SO FIXD | TYPE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | 851 | RC | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 210 | 851 | RC | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 211 | 851 | RC | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 212 | 851 | RC | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 213 | 851 | RC | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 214 | 851 | RC | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 215 | 851 | RC | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 216 | 851 | RC | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 217 | 851 | RC | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 218 | 851 | RC | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 219 | 851 | RC | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 220 | 851 | RC | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 221 | 851 | RC | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 222 | 851 | RC | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 223 | 851 | RC | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 224 | 851 | RC | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 225 | 851 | RC | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 226 | 851 | RC | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 227 | 851 | RC | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 228 | 851 | RC | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 229 | 851 | RC | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 230 | 851 | RC | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 231 | 851 | RC | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 232 | 851 | RC | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 233 | 851 | RC | RTD Mux 8 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 234 | 851 | RC | RTD Mux 8 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 235 | 851 | RC | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 236 | 851 | RC | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 237 | 851 | RC | Cold Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 238 | 851 | RC | Cold Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

## TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 38 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD BULK | USAGE | MN SO G. | NM OS /G W D S / | S O P F I X D | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COEF | C D T ? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 239 | 851 | RC Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 240 | 851 | RC Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 241 | 851 | RC Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 242 | 851 | RC Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 243 | 851 | RC Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 244 | 851 | RC Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 245 | 851 | RC Hot Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 246 | 851 | RC Hot Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 247 | 851 | RC Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 248 | 851 | RC Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 249 | 851 | RC Stepping Motor Phase A Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 250 | 851 | RC Stepping Motor Phase A Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 251 | 851 | RC Stepping Motor Phase B Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 252 | 851 | RC Stepping Motor Phase B Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 253 | 851 | RC Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 254 | 851 | RC Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 255 | 851 | RC IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 256 | 851 | RC Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 257 | 851 | RC IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 258 | 851 | RC IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 259 | 851 | RC Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 260 | 851 | RC IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 261 | 851 | RC SMS Board Velocity Reading | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 262 | 851 | RC Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 263 | 851 | Process Elapsed Time - Seconds | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 264 | 851 | Go/NoGo Error Override | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 265 | 851 | CGF Sytstem State | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 266 | 851 | Auto Pressure Ctl | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 1.7-3. EVENT/EXCEPTION MONITOR REQUIREMENTS

```
-----------------------------------------------------------------------------------------------------------
|E N|C N|EMR| MONITOR VALUES  |M|                 |//////|                  |//////|I T|OC|///|    |/////|
|N U|O O|XOA|-----------------|S|                 |------|                  |------|N I|UO|---|    |-----|
|T M|R  |CNT|        | LOWER  |G|     MESSAGE     |ERROR|     MESSAGE      |ERROR|T M|TU|3PI|    |E  |T|
|R B|R  |PIE| UPPER  | LIMIT/ | | (HIGH/SINGLE)   |MSG. |       LOW        |MSG. |R E| N| AD|    |X  |A|
|Y E|   |TT | LIMIT  | EXPT'D |C|                 |-----|                  |-----|L  |LT|CG |    |P  |B|
|  R|   |IO |        | STATE  |L|                 |G |N |                  |G |N |O  |I |HE |    |I  |L|
|   |   |OR |        |        |S|                 |R |O |                  |R |O |C  |M |A  |    |D  |E|
|   |   |N  |        |        | |                 |P |. |                  |P |. |K  |T "R |    |   | |
-----------------------------------------------------------------------------------------------------------
|207|106|001|    -073|    -128|1|HI WATER TEMP    |41|14|                  |41|  |300|10|CGF|    |41|4|
|208|106|001|    -077|    -128|1|HI HUMIDITY LWR  |41|16|                  |41|  |300|10|CGF|    |41|4|
|209|106|001|    -077|    -128|1|HI HUMIDITY UPR  |41|18|                  |41|  |300|10|CGF|    |41|4|
|210|106|001|    -004|    -128|1|HI ATMOS TEMP    |41|1A|                  |41|  |300|10|MAN|    |41|4|
|211|106|001|    -073|    -128|1|HI CLD END TEMP  |41|1C|                  |41|  |300|10|MAN|    |41|4|
|212|106|001|    -073|    -128|1|HI HOT END TEMP  |41|1E|                  |41|  |300|10|MAN|    |41|4|
|215|106|001|    -009|    -073|1|HI IFEA PRES 1   |41|20|LO IFEA PRES 1    |41|21|300|10|CGF|    |41|4|
|216|106|001|    -009|    -073|1|HI IFEA PRES 2   |41|22|LO IFEA PRES 2    |41|23|300|10|CGF|    |41|4|
|219|106|001|    +105|    -128|1|HI MAIN CURRENT  |41|24|                  |41|  |300|10|CGF|    |41|4|
|220|106|001|    +076|    +018|1|HI MAIN VOLTAGE  |41|26|LO MAIN VOLTAGE   |41|27|300|10|CGF|    |41|4|
|223|106|001|        |       1|1|LO WATER FLOW    |41|28|                  |41|  |300|05|CGF|    |41|4|
|224|106|001|        |       1|1|LO WATER FLOW    |41|2A|                  |41|  |300|05|CGF|    |41|4|
|237|106|001|        |       1|1|NO AVIONICS AIR  |41|2C|                  |41|  |300|05|CGF|    |41|4|
|238|106|001|        |       1|1|NO AVIONICS AIR  |41|2E|                  |41|  |300|05|CGF|    |41|4|
|239|106|001|        |       1|1|NO AVIONICS AIR  |41|30|                  |41|  |300|05|CGF|    |41|4|
|240|106|001|        |       1|1|NO AVIONICS AIR  |41|32|                  |41|  |300|05|CGF|    |41|4|
|265|106|001|        |       1|1|WTR OUT BYPASS   |41|34|                  |41|  |300|05|MAN|    |41|4|
|266|106|001|        |       0|1|WTR OUT BYPASS   |41|36|                  |41|  |300|05|MAN|    |41|4|
|267|106|001|        |       1|1|WTR IN BYPASS    |41|38|                  |41|  |300|05|MAN|    |41|4|
|268|106|001|        |       0|1|WTR IN BYPASS    |41|3A|                  |41|  |300|05|MAN|    |41|4|
|287|106|001|        |       1|1|EXTRM TRVL LIM   |41|3C|                  |41|  |300|05|FTS|    |41|4|
|288|106|001|        |       0|1|EXTRM TRVL LIM   |41|3E|                  |41|  |300|05|FTS|    |41|4|
|319|106|001|        |       0|1|EXP BUS PWR OFF  |41|40|                  |41|  |300|05|CGF|    |41|4|
|320|106|001|        |       1|1|EXP BUS PWR OFF  |41|42|                  |41|  |300|05|CGF|    |41|4|
-----------------------------------------------------------------------------------------------------------
   |   |   |        |       | | |                 |  |  |                  |  |  |  |  |  |    |  |
   0   0   0        1       2 2 2                 4  4  4                  6  6  6  6  7    7  8
   3   6   9        7       5 6 7                 3  5  6                  2  4  7  9  2    9  0
```

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 1 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 002 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 004 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 005 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 138 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 139 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 140 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 141 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 142 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 143 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 144 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 145 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 146 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 147 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 148 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 149 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 150 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 151 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 152 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 153 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 154 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 155 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 156 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 157 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 158 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 159 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 160 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 161 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 162 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 163 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 2 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | //// EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 164 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 165 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 166 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 167 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 168 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 169 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 170 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 171 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 172 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 173 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 174 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 175 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 176 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 177 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 178 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 179 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 180 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 181 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 182 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 183 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 184 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 185 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 187 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 188 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 189 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 190 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 191 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 192 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 193 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 194 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 195 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 3 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | ///// EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 196 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 197 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 198 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 199 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 200 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 201 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 202 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 203 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 204 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 205 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 206 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 207 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 208 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 209 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 210 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 211 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 212 | 850 | PC | +0000000+00 | +3663000-01 | | | | | 41 | 6 |
| 213 | 850 | PC | +0000000+00 | +9768000-02 | | | | | 41 | 6 |
| 214 | 850 | PC | +0000000+00 | +2442000-01 | | | | | 41 | 6 |
| 215 | 850 | PC | +0000000+00 | +2442000-01 | | | | | 41 | 6 |
| 216 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 217 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 218 | 850 | PC | -2419000+03 | +2325500+01 | +9104500-03 | +2442500-06 | | | 41 | 6 |
| 219 | 850 | PC | -2419000+03 | +2325500+01 | +9104500-03 | +2442500-06 | | | 41 | 6 |
| 220 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 221 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 222 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 223 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 224 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 225 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 226 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 4 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// |  |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
| 227 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 228 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 229 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 230 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 231 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 232 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 233 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 234 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 235 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 236 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 237 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 238 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 239 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 240 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 241 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 242 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 243 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 244 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 245 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 246 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 247 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 248 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 249 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 250 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 251 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 252 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 253 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 254 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 255 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 256 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 257 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 5 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL B |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ////| |
| 258 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 259 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 260 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 261 | 850 | PC | +0000000+00 | +1743900-02 | | | | | 41 | 6 |
| 262 | 850 | PC | +0000000+00 | +5086300-02 | | | | | 41 | 6 |
| 263 | 850 | PC | +0000000+00 | +1743900-02 | | | | | 41 | 6 |
| 264 | 850 | PC | +0000000+00 | +5086300-02 | | | | | 41 | 6 |
| 265 | 850 | PC | -2566000+01 | +1364100+00 | | | | | 41 | 6 |
| 266 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 267 | 850 | PC | +0000000+00 | +1627600+01 | | | | | 41 | 6 |
| 268 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 269 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 270 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 271 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 272 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 273 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 274 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 275 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 276 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 277 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 278 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 279 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 280 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 281 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 282 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 283 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 284 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 285 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 286 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 287 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 288 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 6 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | //// EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 289 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 290 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 291 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 292 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 293 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 294 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 295 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 296 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 297 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 298 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 299 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 300 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 301 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 302 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 303 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 304 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 305 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 306 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 307 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 308 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 309 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 310 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 311 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 312 | 850 | PC | +0000000+00 | +8302800-01 | | | | | 41 | 6 |
| 313 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 314 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 315 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 316 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 317 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 318 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 319 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

## TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 7 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 320 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 321 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 322 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 323 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 324 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 325 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 326 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 327 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 328 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 329 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 330 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 331 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 332 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 333 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 334 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 335 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 336 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 337 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 338 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 339 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 340 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 341 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 342 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 343 | 850 | PC | +0000000+00 | +7096670-04 | | | | | 41 | 6 |
| 344 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 345 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 346 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 347 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 348 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 349 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 350 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 8 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 352 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 353 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 354 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 356 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 357 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 358 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 360 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 361 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 362 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 363 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 364 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 365 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 366 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 369 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 370 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 371 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 372 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 373 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 374 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 377 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 378 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 379 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 380 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 381 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 382 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 385 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 386 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 387 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 388 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 389 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 390 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | | 079 | 080 |

## TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 9 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | //// | |
| 391 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 392 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 393 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 394 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 395 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 396 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 397 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 398 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 399 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 400 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 401 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 402 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 403 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 404 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 405 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 406 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 407 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 408 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 409 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 410 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 411 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 412 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 413 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 414 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 415 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 417 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 418 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 419 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 421 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 422 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 423 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 10 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 425 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 427 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 428 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 429 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 431 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 432 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 433 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 435 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 437 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 438 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 439 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 441 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 442 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 443 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 445 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 447 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 448 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 449 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 451 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 452 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 453 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 455 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 457 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 458 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 459 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 461 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 462 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 463 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 470 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 471 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 472 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 11 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 473 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 474 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 475 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 476 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 477 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 478 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 479 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 480 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 481 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 482 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 483 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 484 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 485 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 486 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 487 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 488 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 001 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 002 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 004 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 005 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 006 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 007 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 008 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 009 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 010 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 011 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 012 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 013 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 014 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 015 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 12 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | ///// EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 016 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 017 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 018 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 019 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 020 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 021 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 022 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 023 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 024 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 025 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 026 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 027 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 028 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 029 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 030 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 031 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 032 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 033 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 034 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 035 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 036 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 037 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 038 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 039 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 040 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 041 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 042 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 043 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 044 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 045 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 046 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 13 of 20)

| ENTRY | NUMBER CORR | NO CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 047 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 048 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 049 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 050 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 051 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 052 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 053 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 054 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 055 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 056 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 057 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 058 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 059 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 060 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 061 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 062 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 063 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 064 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 065 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 066 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 067 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 068 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 069 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 070 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 071 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 072 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 073 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 074 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 075 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 076 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 077 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | | |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | | 079 | 080 |

## TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 14 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 078 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 079 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 080 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 081 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 082 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 083 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 084 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 085 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 086 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 087 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 088 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 089 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 090 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 091 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 092 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 093 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 094 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 095 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 096 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 097 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 098 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 099 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 100 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 101 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 102 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 103 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 104 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 105 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 106 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 107 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 108 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 03 | 05 | 07 | 18 | 29 | 40 | 51 | 62 | 73 | 79 | 80 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 15 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP I.D | TABL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 109 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 110 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 111 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 112 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 113 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 114 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 115 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 116 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 117 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 118 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 119 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 120 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 121 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 122 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 123 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 124 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 125 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 126 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 127 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 128 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 129 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 130 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 131 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 132 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 133 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 134 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 135 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 136 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 137 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 138 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 139 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 | |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 16 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 140 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 141 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 142 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 143 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 144 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 145 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 146 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 147 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 148 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 149 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 150 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 151 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 152 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 153 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 154 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 155 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 156 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 157 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 158 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 159 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 160 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 161 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 162 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 163 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 164 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 165 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 166 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 167 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 168 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 169 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 170 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 17 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | | //// EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 171 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 172 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 173 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 174 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 175 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 176 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 177 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 178 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 179 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 180 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 181 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 182 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 183 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 184 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 185 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 186 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 187 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 188 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 189 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 190 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 191 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 192 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 193 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 194 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 195 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 196 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 197 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 198 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 199 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 200 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 201 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | | 079 | 080 |

TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 18 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// | |
| 202 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 203 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 204 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 205 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 206 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 207 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 208 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 209 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 210 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 211 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 212 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 213 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 214 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 215 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 216 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 217 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 218 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 219 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 220 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 221 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 222 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 223 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 224 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 225 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 226 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 227 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 228 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 229 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 230 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 231 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 232 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

## TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 19 of 20)

| ENTRY | NUMBER | COLOR | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 233 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 234 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 235 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 236 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 237 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 238 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 239 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 240 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 241 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 242 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 243 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 244 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 245 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 246 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 247 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 248 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 249 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 250 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 251 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 252 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 253 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 254 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 255 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 256 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 257 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 258 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 259 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 260 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 261 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 262 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 263 | 851 | PC | +0000000+00 | +5000000-01 | | | | | | |

003 005 007 018 029 040 051 062 073 079 080

TABLE 1.7-4. POIC DISPLAY REQUIREMENTS (Sheet 20 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
| 265 | 851 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 1 of 14)

| ENTRY | COMPUTER NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 850 | EM | | | | 0 | CDAS FAILURE-BITE #1 (Tbl 1) | OK | FAIL | 41 | 7 |
| 002 | 850 | EM | | | | 0 | CDAS FAILURE-BITE #2 (Tbl 1) | OK | FAIL | 41 | 7 |
| 003 | 850 | EM | | | | 0 | PDS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 004 | 850 | EM | | | | 1 | PDS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 005 | 850 | EM | | | | 0 | SCS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 006 | 850 | | | | | | | YES | NO | 41 | 7 |
| 006 | 850 | EM | | | | 1 | SCS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 007 | 850 | | | | | | | NO | YES | 41 | 7 |
| 007 | 850 | EM | | | | 0 | CDAS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 008 | 850 | EM | | | | 1 | EXTRM TRAVEL LIMIT EXCEEDED | YES | NO | 41 | 7 |
| 008 | 850 | EM | | | | 1 | CDAS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 009 | 850 | EM | | | | 0 | EXTRM TRAVEL LIMIT EXCEEDED | NO | YES | 41 | 7 |
| 010 | 850 | | | | | | | YES | NO | 41 | 7 |
| 011 | 850 | | | | | | | NO | YES | 41 | 7 |
| 011 | 850 | EM | | | | 1 | NO AVIONICS AIR-SCS #2 (Tbl | FAIL | OK | 41 | 7 |
| 012 | 850 | EM | | | | | | YES | NO | 41 | 7 |
| 012 | 850 | EM | | | | 1 | NO AVIONICS AIR-PDS #2 (Tbl | FAIL | OK | 41 | 7 |
| 013 | 850 | | | | | | | NO | YES | 41 | 7 |
| 014 | 850 | EM | | | | 1 | WATER OUTLET BYPASS | BYPS | NORM | 41 | 7 |
| 015 | 850 | EM | | | | 0 | WATER OUTLET BYPASS | NORM | BYPS | 41 | 7 |
| 016 | 850 | EM | | | | 1 | WATER INLET BYPASS | BYPS | NORM | 41 | 7 |
| 017 | 850 | EM | | | | 0 | WATER INLET BYPASS | NORM | BYPS | 41 | 7 |
| 018 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 019 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 020 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 021 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 022 | 850 | | | | | | | YES | NO | 41 | 7 |
| 023 | 850 | | | | | | | NO | YES | 41 | 7 |
| 024 | 850 | | | | | | | YES | NO | 41 | 7 |
| 025 | 850 | | | | | | | NO | YES | 41 | 7 |
| 026 | 850 | | | | | | | YES | NO | 41 | 7 |
| 027 | 850 | | | | | | | NO | YES | 41 | 7 |
| 028 | 850 | | | | | | | NO | YES | 41 | 7 |
| 03 | 05 | | 12 | 20 | 28 | 36 | 38 | 66 | 72 | 79 81 | 83 |

# TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 2 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 850 | | | | | | | NO | YES | 41 | 7 |
| 030 | 850 | | | | | | | YES | NO | 41 | 7 |
| 031 | 850 | | | | | | | NO | YES | 41 | 7 |
| 032 | 850 | | | | | | | YES | NO | 41 | 7 |
| 033 | 850 | | | | | | | NO | YES | 41 | 7 |
| 034 | 850 | | | | | | | YES | NO | 41 | 7 |
| 035 | 850 | | | | | | | NO | YES | 41 | 7 |
| 036 | 850 | | | | | | | YES | NO | 41 | 7 |
| 037 | 850 | | | | | | | NO | YES | 41 | 7 |
| 038 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 039 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 040 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 041 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 042 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 043 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 044 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 045 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 046 | 850 | EM | | | | 1 | NO AVIONICS AIR - PDS #1 | FAIL | OK | 41 | 7 |
| 047 | 850 | EM | | | | 1 | NO AVIONICS AIR - PCS #1 | FAIL | OK | 41 | 7 |
| 048 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 049 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 050 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 051 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 052 | 850 | EM | | | | 1 | LO IFEA WATER FLOW #1 | FAIL | OK | 41 | 7 |
| 053 | 850 | EM | | | | 1 | NO AVIONICS AIR - SCS #1 | FAIL | OK | 41 | 7 |
| 054 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 055 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 056 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 057 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 058 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 059 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 060 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 061 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 3 of 14)

| ENTRY | CONN NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 062 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 063 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 064 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 065 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 066 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 067 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 068 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 069 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 070 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 071 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 072 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 073 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 074 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 075 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 076 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 077 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 078 | 850 | | | | | | | YES | NO | 41 | 7 |
| 079 | 850 | | | | | | | NO | YES | 41 | 7 |
| 080 | 850 | | | | | | | YES | NO | 41 | 7 |
| 081 | 850 | | | | | | | NO | YES | 41 | 7 |
| 082 | 850 | | | | | | | YES | NO | 41 | 7 |
| 083 | 850 | | | | | | | NO | YES | 41 | 7 |
| 084 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 085 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 086 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 087 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 088 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 089 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 090 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 091 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 092 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 093 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 094 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 03 | 05 | 12 | 20 | 28 | 36 | 38 | 66 | 72 | 79 | 81 | 83 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 4 of 14)

| ENTRY NUMBER | COUNTER NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 095 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 096 | 850 | EM | | | | 1 | LO IFEA WATER FLOW #2 | FAIL | OK | 41 | 7 |
| 097 | 850 | EM | | | | 1 | NO AVIONICS AIR - PCS #2 | FAIL | OK | 41 | 7 |
| 098 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 099 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 100 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 101 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 102 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 103 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 104 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 105 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 106 | 850 | EM | | | | 0 | PCS UTILITY PWR OFF | ON | OFF | 41 | 7 |
| 107 | 850 | EM | | | | 1 | PCS UTILITY PWR OFF | OFF | ON | 41 | 7 |
| 108 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 109 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 110 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 111 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 112 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 113 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 114 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 115 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 116 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 117 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 118 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 119 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 120 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 121 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 122 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 123 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 124 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 125 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 126 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 127 | 850 | | | | | | | OFF | ON | 41 | 7 |

003 005 012 020 028 036 038 066 072 079 081 083

# TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 5 of 14)

| ENTRY | CNUOMRBIER | MONITORTYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 128 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 129 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 130 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 131 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 132 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 133 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 134 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 135 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 136 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 137 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 186 | 850 | | | | | | | NO | YES | 41 | 7 |
| 200 | 850 | EM | | | | 1 | | WAIT | RUN | 41 | 7 |
| 212 | 850 | LS | 3740 | | 3740 | | HI EXP MAIN BUS CURRENT | | | 41 | 7 |
| 213 | 850 | LS | 3358 | 2396 | | | EXP MAIN BUS VOLTAGE OOL | | | 41 | 7 |
| 214 | 850 | LS | 410 | | 819 | | HI IFEA LOWER HUMIDITY | | | 41 | 7 |
| 215 | 850 | LS | 410 | | 819 | | HI IFEA UPPER HUMIDITY | | | 41 | 7 |
| 216 | 850 | LS | 1911 | 887 | 1979 | 887 | IFEA PRESSURE 1 OOL | | | 41 | 7 |
| 217 | 850 | LS | 1911 | 887 | 1979 | 887 | IFEA PRESSURE 2 OOL | | | 41 | 7 |
| 218 | 850 | LS | 1954 | | 2035 | | HI LOWER ATMOS TEMP | | | 41 | 7 |
| 219 | 850 | LS | 1954 | | 2035 | | HI UPPER ATMOS TEMP | | | 41 | 7 |
| 220 | 850 | LS | 504 | | 585 | | HI IFEA WATER INLET TEMP | | | 41 | 7 |
| 221 | 850 | LS | 827 | | 907 | | HI IFEA WATER OUTLET TEMP | | | 41 | 7 |
| 222 | 850 | LS | 827 | | 907 | | HI CLD END SHELL TEMP | | | 41 | 7 |
| 223 | 850 | LS | 827 | | 907 | | HI HOT END SHELL TEMP | | | 41 | 7 |
| 224 | 850 | LS | 827 | | 907 | | HI RFM WATER OUTLET TEMP | | | 41 | 7 |
| 261 | 850 | LS | 2007 | | 2007 | | HI STEP MTR PHASE A CURRENT | | | 41 | 7 |
| 262 | 850 | LS | 2163 | | 2163 | | HI STEP MTR PHASE A VOLTAGE | | | 41 | 7 |
| 263 | 850 | LS | 2007 | | 2007 | | HI STEP MTR PHASE B CURRENT | | | 41 | 7 |
| 264 | 850 | LS | 2163 | | 2163 | | HI STEP MTR PHASE B VOLTAGE | | | 41 | 7 |
| 266 | 850 | LS | 827 | | 1067 | | HI FTS STEPPER MOTOR TEMP | | | 41 | 7 |
| 268 | 850 | LS | 3003 | | 3003 | | HI COLD GUARD HTR CURRENT | | | 41 | 7 |
| 269 | 850 | LS | 1536 | | 1536 | | HI COLD GUARD HTR VOLTAGE | | | 41 | 7 |
| 270 | 850 | LS | 3003 | | 3003 | | HI COLD PRIM HTR CURRENT | | | 41 | 7 |

003 005 012 020 028 036 038 066 072 079 081 083

# TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 6 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 271 | 850 | LS | 1536 | | 1536 | | HI COLD PRIM HTR VOLTAGE | | | 41 | 7 |
| 272 | 850 | LS | 3003 | | 3003 | | HI COLD RED HTR CURRENT | | | 41 | 7 |
| 273 | 850 | LS | 1536 | | 1536 | | HI COLD RED HTR VOLTAGE | | | 41 | 7 |
| 274 | 850 | LS | 3003 | | 3003 | | HI BOOST HTR CURRENT | | | 41 | 7 |
| 275 | 850 | LS | 3072 | | 3072 | | HI BOOST HTR VOLTAGE | | | 41 | 7 |
| 276 | 850 | LS | 3003 | | 3003 | | HI HOT GUARD HTR CURRENT | | | 41 | 7 |
| 277 | 850 | LS | 1536 | | 1536 | | HI HOT GUARD HTR VOLTAGE | | | 41 | 7 |
| 278 | 850 | LS | 3003 | | 3003 | | HI HOT PRIM HTR CURRENT | | | 41 | 7 |
| 279 | 850 | LS | 3072 | | 3072 | | HI HOT PRIM HTR VOLTAGE | | | 41 | 7 |
| 280 | 850 | LS | 3003 | | 3003 | | HI HOT RED HTR CURRENT | | | 41 | 7 |
| 281 | 850 | LS | 3072 | | 3072 | | HI HOT RED HTR VOLTAGE | | | 41 | 7 |
| 282 | 850 | LS | 827 | | 907 | | HI CJ TEMP - COLD ZONE #1 | | | 41 | 7 |
| 283 | 850 | LS | 827 | | 907 | | HI CJ TEMP - COLD ZONE #2 | | | 41 | 7 |
| 284 | 850 | LS | 827 | | 907 | | HI CJ TEMP - HOT ZONE #1 | | | 41 | 7 |
| 285 | 850 | LS | 827 | | 907 | | HI CJ TEMP - HOT ZONE #2 | | | 41 | 7 |
| 286 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 1 SENSOR 1 | | | 41 | 7 |
| 287 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 1 SENSOR 2 | | | 41 | 7 |
| 288 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 2 SENSOR 1 | | | 41 | 7 |
| 289 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 2 SENSOR 2 | | | 41 | 7 |
| 290 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 3 SENSOR 1 | | | 41 | 7 |
| 291 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 3 SENSOR 2 | | | 41 | 7 |
| 292 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 4 SENSOR 1 | | | 41 | 7 |
| 293 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 4 SENSOR 2 | | | 41 | 7 |
| 294 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 5 SENSOR 1 | | | 41 | 7 |
| 295 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 5 SENSOR 2 | | | 41 | 7 |
| 296 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 6 SENSOR 1 | | | 41 | 7 |
| 297 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 6 SENSOR 2 | | | 41 | 7 |
| 313 | 850 | LS | 987 | | 1227 | | HI ALIGN ARM TEMP | | | 41 | 7 |
| 314 | 850 | LS | 827 | | 907 | | HI SEM TRACK TEMP | | | 41 | 7 |
| 465 | 850 | | | | | | | NO | YES | 41 | 7 |
| 466 | 850 | | | | | | | NO | YES | 41 | 7 |
| 467 | 850 | | | | | | | NO | YES | 41 | 7 |
| 468 | 850 | | | | | | | NO | YES | 41 | 7 |
| 003 | 005 | | 012 | 020 | 028 | 036 038 | 066 | 072 | 079 | 081 | 083 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 7 of 14)

| ENTRY | COMPONENT NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 469 | 850 | | | | | | | NO | YES | 41 | 7 |
| 489 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 490 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 491 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 492 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 493 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 494 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 495 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 496 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 497 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 498 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 499 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 500 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 501 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 502 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 503 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 504 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 505 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 506 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 507 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 508 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 509 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 510 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 511 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 512 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 513 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 514 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 515 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 516 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 517 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 518 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 519 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 520 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 03 | 05 | 12 | 20 | 28 | 36 | 38 | | 66 | 72 | 79 | 81 / 83 |

# TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 8 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 521 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 522 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 523 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 524 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 525 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 526 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 527 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 528 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 529 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 530 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 531 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 532 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 533 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 534 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 535 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 536 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 537 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 538 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 539 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 540 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 541 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 542 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 543 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 544 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 545 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 546 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 547 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 548 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 549 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 550 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 551 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 552 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 553 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 03 | 05 | 12 | 20 | 28 | 36 | 38 | 66 | 72 | 79 | 81 | 83 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 9 of 14)

| ENTRY | C NUMBER | NO MONITOR | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1554 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1555 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1556 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1557 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1558 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1559 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1560 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1561 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1562 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1563 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1564 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1565 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1566 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1567 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1568 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1569 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1570 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1571 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1572 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1573 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1574 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1575 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1576 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1577 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1578 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1579 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1580 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1581 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1582 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1583 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1584 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1585 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1586 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 003 005 | | | 012 | 020 | 028 | 036 038 | | 066 | 072 | 079 081 | 083 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 10 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 587 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 588 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 589 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 590 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 591 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 592 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 593 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 594 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 595 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 596 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 597 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 598 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 599 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 600 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 601 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 602 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 603 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 604 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 605 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 606 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 607 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 608 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 609 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 610 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 611 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 612 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 613 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 614 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 615 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 616 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 617 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 618 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 619 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 03 | 05 | | 12 | 20 | 28 | 36 38 | 66 | 72 | 79 | 81 | 83 |

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 11 of 14)

| ENTRY NUMBER | CONNECTOR NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 620 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 621 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 622 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 623 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 624 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 625 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 626 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 627 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 628 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 629 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 630 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 631 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 632 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 633 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 634 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 635 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 636 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 637 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 638 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 639 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 640 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 641 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 642 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 643 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 644 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 645 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 646 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 647 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 648 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 649 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 650 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 651 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 652 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 003 | 005 | | 012 | 020 | 028 | 036 038 | | 066 | 072 | 079 081 | 083 |

# TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 12 of 14)

| ENTRY | NUMBER | CONVERSION TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 653 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 654 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 655 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 656 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 657 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 658 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 659 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 660 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 661 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 662 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 663 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 664 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 665 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 666 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 667 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 668 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 669 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 670 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 671 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 672 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 673 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 674 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 675 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 676 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 677 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 678 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 679 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 680 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 681 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 682 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 683 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 684 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 685 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 33 38 66 72 79 81 83

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 13 of 14)

| ENTRY | CONVERSION NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 686 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 687 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 688 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 689 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 690 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 691 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 692 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 693 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 694 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 695 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 696 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 697 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 698 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 699 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 700 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 701 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 702 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 703 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 704 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 705 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 706 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 707 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 708 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 709 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 710 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 711 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 712 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 713 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 714 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 715 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 716 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 717 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 718 | 850 | | | | | | | | | | |

003 005 012 020 028 036 038 066 072 079 081 083

TABLE 1.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 14 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 719 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 720 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 721 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 722 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 723 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 724 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 725 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 726 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 727 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 728 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 729 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 730 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 731 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 732 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 733 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 734 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 735 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 736 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 737 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 738 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 739 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 740 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 741 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 742 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 743 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 744 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 745 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 746 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 747 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 748 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 749 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 750 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 264 | 851 | | | | | | | OK | FAIL | 41 | 7 |
| 266 | 851 | | | | | | | RUN | WAIT | 42 | 7 |
| | | | | | | | | NO | YES | 42 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

# 1.8. FLIGHT SOFTWARE REQUIREMENTS

This section of the Experiment/Facility Requirements Document (E/FRD) defines the Space Station Freedom (SSF) Data Management System (DMS) software functions required to support the Space Station Furnace Facility (SSFF).

The SSFF Core Control Unit (CCU) software will interface to the SSF Payload Executive Software (PES) for DMS services and executive-level control. The SSFF Furnace Control Unit (FCU) and Furnace Actuator Unit (FAU) software provides networking, data processing, storage, and data acquisition and control for Furnace Module-1. The SSFF software external interface diagram is shown in Figure 1.8-1. The SSFF software component tree is shown in Figure 1.8-2. These components will reside in the DMS hardware. The following subsections define the required resources and data handling requirements.

## 1.8.1 COMMAND SUPPORT

The SSF via the PES software will support the issuance of commands and SSFF activation given by the ground, onboard crew, or Tier 1.

## 1.8.2 HEALTH AND STATUS DATA

The PES will acquire health and status data from the SSFF and distribute it to Tier 1 on board and to the Payload Operations Integration Center (POIC) on the ground.

## 1.8.3 ONBOARD STORAGE

The SSF will provide storage for SSFF and/or Furnace Module-1 program loads, operations, status, and science data.

## 1.8.4 DISPLAY

The SSF multipurpose application console (MPAC) will provide backup support of the SSFF crew interface for onboard SSFF configuration and preparations for Furnace Module-1 experiment operations.

## 1.8.5 PROGRAM LOADS AND MODIFICATIONS DOWNLOADING

The SSF software shall support the downloading of SSFF program loads and modifications.

## 1.8.6 ANCILLARY DATA

The SSF shall support requests for ancillary data.

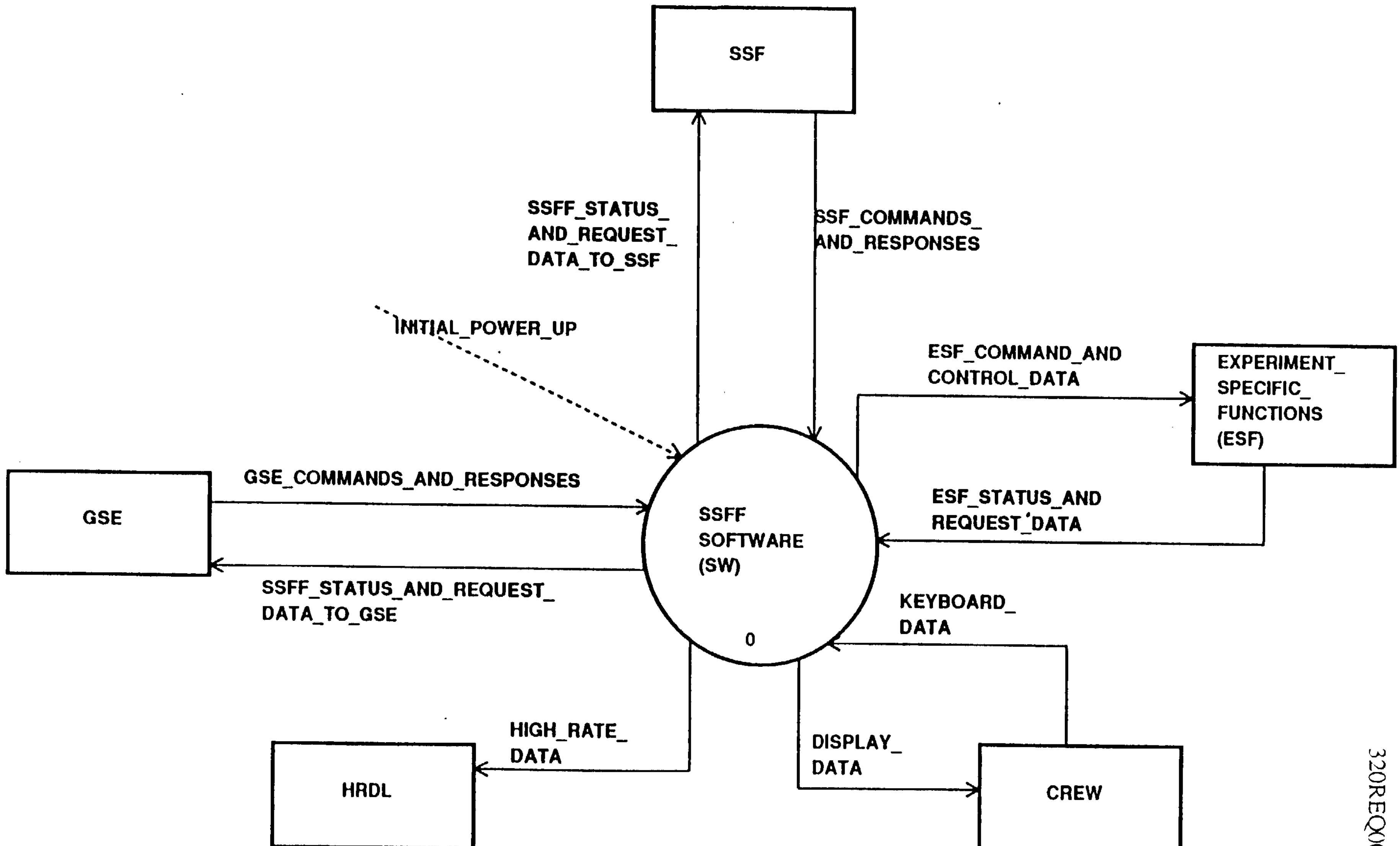



FIGURE 1.8-1. SSFF SOFTWARE EXTERNAL INTERFACE DIAGRAM

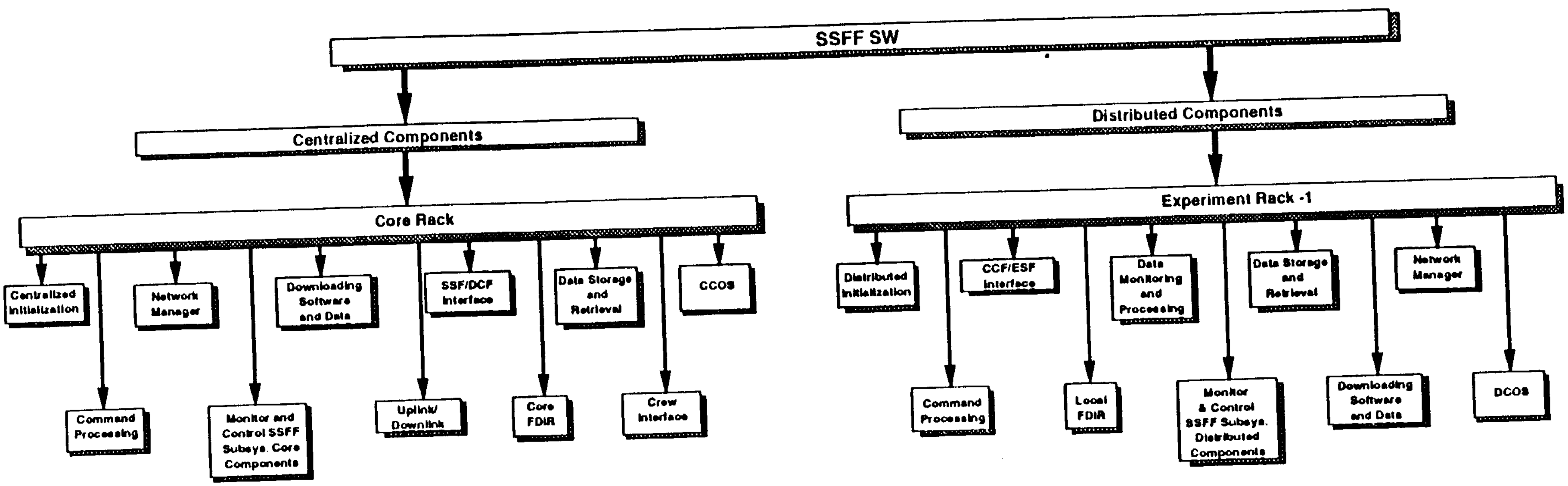



FIGURE 1.8-2. SOFTWARE COMPONENT TREE

# 1.9. PHYSICAL INTEGRATION

## 1.9.1 RACK INTEGRATION AND CHECKOUT

Physical integration during prelaunch consists of checkout and integration of Furnace Module-1, the individual Core Rack and Experiment Rack-1, and finally the SSFF as an integrated system. Interfaces are progressively verified as the buildup of the Space Station Furnace Facility (SSFF) is performed. Following shipment to Kennedy Space Center (KSC), the facility is visually checked for physical integrity, and a limited functional test is performed to ensure operability and Space Station Freedom (SSF) interface compatibility. The prelaunch activities flow is shown in Figure 1.9-1. Table 1.9-1 provides the integration facility requirements for each stage of integration. Table 1.9-2 describes the requirements and activities at each step of the integration process.

### 1.9.1.1 Core Rack Checkout

Tests, using the appropriate ground support equipment (GSE) including SSF and experiment rack interface simulators, will be performed to verify proper operations of the Core Rack. Testing will include operation of each SSFF subsystem and component to its operational limits, and an integrated SSFF exercising each of the interface functions, through the use of simulators, with the SSF and the experiment rack.

### 1.9.1.2 Experiment Rack-1 Checkout

The pre-experiment rack checkout will consist of verifying the performance of the SSFF distributed subsystems in Experiment Rack-1 and its interfaces to the Core Rack and Furnace Module-1.

### 1.9.1.3 Furnace Module-1 Checkout

Furnace Module-1 tests will be used to verify the performance to operational limits with the exception that heater limits will only be to the extent that they prove operability. The Furnace Module-1 interface to Experiment Rack-1 will be verified through the functional performance tests and the physical connects of the experiment rack simulator.

### 1.9.1.4 Integrated Furnace Rack Checkout

Following integration of Furnace Module-1 into Experiment Rack-1, the rack performance and interfaces will be verified using a Core Rack simulator and test set. Tests will be limited to only those required to verify Furnace Module-1 to Experiment Rack-1 interfaces.

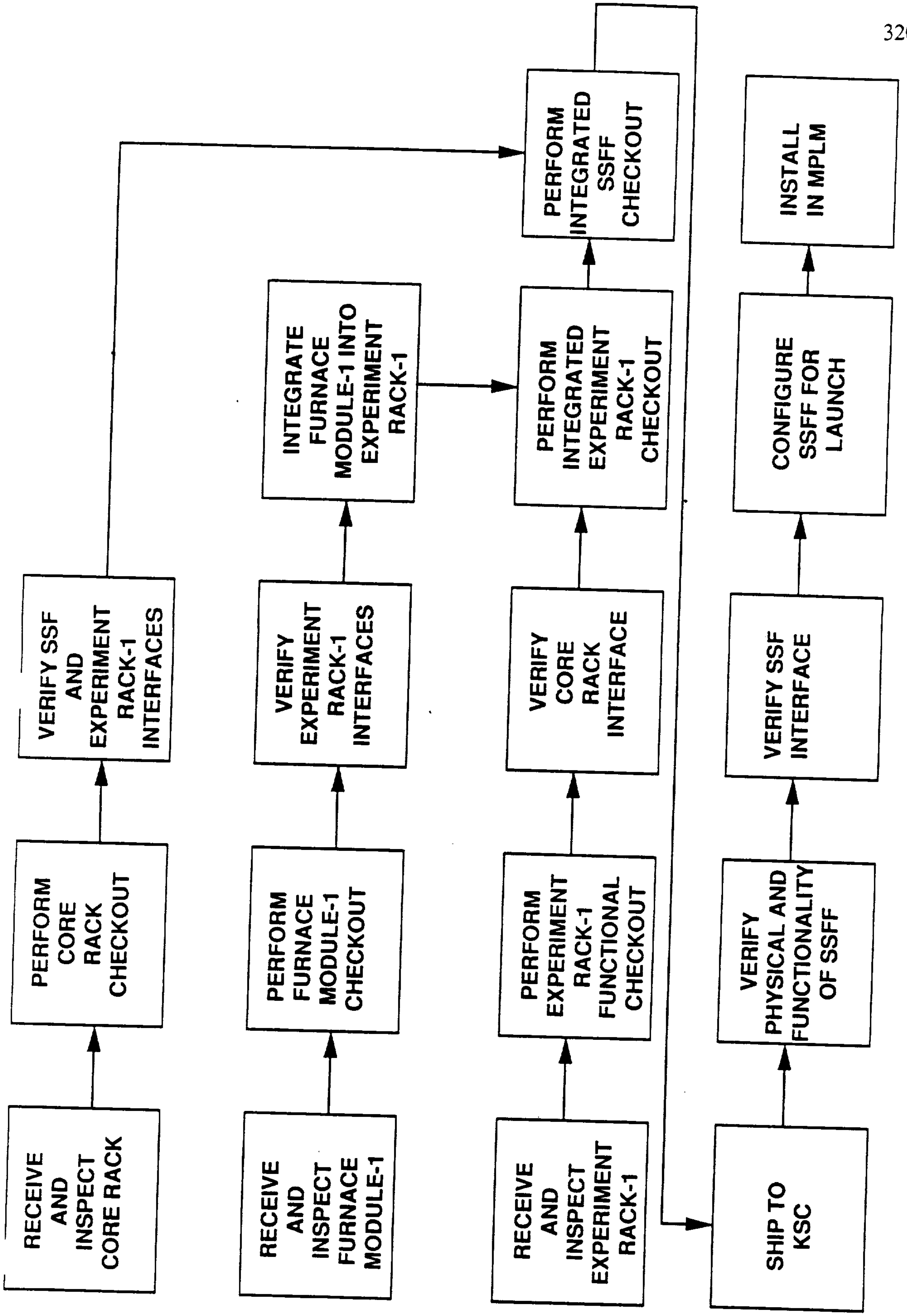



FIGURE 1.9-1. PHYSICAL INTEGRATION FLOW

TABLE 1.9-1. SSFF INTEGRATION GROUND PROCESSING REQUIREMENTS

( X ) Experiment/Facility Preintegration
(   ) Experiment/Facility Preparation
(   ) Postmission Requirements

Description of Planned Activities:
Rack Integration, Rack Functional Tests, SSFF Systems Integrated Tests

Total Floor Space Required Including Space for GSE: __2000__ $ft^2$

Ceiling Height Required: __10__ ft

Overhead Crane Required: __X__ Yes _____ No Hook Height __8__ ft

Facility Power Required:
__X__ 120 V, 1 F, 60 Hz
_____ 208 V, 3 F, 60 Hz
_____ Other

Other Facility Support: Gases
__X__ $GN_2$
_____ GHe
__GAr__ Other

Liquids Single Phase Precooled $H_2O$

Environment: __X__ Standard ___ Other

Hazardous Operations: _____ Yes __X__ No

Total Anticipated Use Time: __45__ Days

Other Facility Support Description:

GSE Test sets including the following interface simulators:

* Furnace Module-to-Experiment
* Core Rack-to-Experiment Rack
* Experiment Rack-to-Core Rack
* SSF-to-Core Rack
* Experiment Rack Subsystem-to-Furnace Module

TABLE 1.9-2. SSFF INTEGRATION REQUIREMENTS

**Description of Special Alignment, Calibration, Servicing, or Performance Verification and Estimated Time to Perform:**

* Vent & Purge test of Furnace Module-1 - 60 min
* Calibration of Analog Sensors - 90 min

**Identification of Any Constraints on Experiment/Facility Operations During Tests:**

None Identified

**Description of Time-Critical Operations and Time Constraints:**

None Identified

1.9.1.5 SSFF Facility Checkout

Following checkout of the individual racks, an overall SSFF integrated systems test will be performed. Tests will be limited to verify Core Rack-to-Experiment Rack-1 interfaces and to SSF.

## 1.9.2 KSC VERIFICATION

Physical integration at KSC will be limited to receiving/inspection of the SSFF hardware complement and to reverification of the physical and functional interfaces with the SSF.

## 1.9.3 POSTLANDING

Postlanding activities consist of the following: (1) Removing the SSFF equipment and experiment samples from the returning Mini-Pressurized Logistics Module (MPLM); (2) returning the Furnace Module-1 samples to the Payload Investigator; (3) removing the Furnace Module-1 from Experiment Rack-1 and returning it to the PED; and (4) refurbishing Experiment Rack-1. These activities are shown in Table 1.9-3 and Figure 1.9-2.

TABLE 1.9-3. SSFF POSTLANDING GROUND PROCESSING REQUIREMENTS

( ) Experiment/Facility Preintegration
( ) Experiment/Facility Preparation
( X ) Postmission Requirements

Description of Planned Activities:
Remove flight samples from stowage and return to Experimenter.
Remove flight rack from MPLM.
Remove furnace module from experiment rack and return to PED.
Move experiment rack to the rack refurb area and refurbish experiment rack.
Ship rack to the rack integration and checkout area.

Total Floor Space Required Including Space for GSE: 2000 $ft^2$

Ceiling Height Required: 10 ft

Overhead Crane Required: X Yes _ No Hook Height 8 ft

Facility Power Required:
____ 120 V, 1 F, 60 Hz N/A
____ 208 V, 3 F, 60 Hz
____ Other

Other Facility Support: Gases N/A
____ $GN_2$ Liquids N / A
____ GHe ____
____ Other ____

Environment: X Standard ____ Other

Hazardous Operations: ____ Yes X No

Total Anticipated Use Time: 3 Days

Other Facility Support Description:

Module shipping container
Rack shipping container
Rack rotation stand

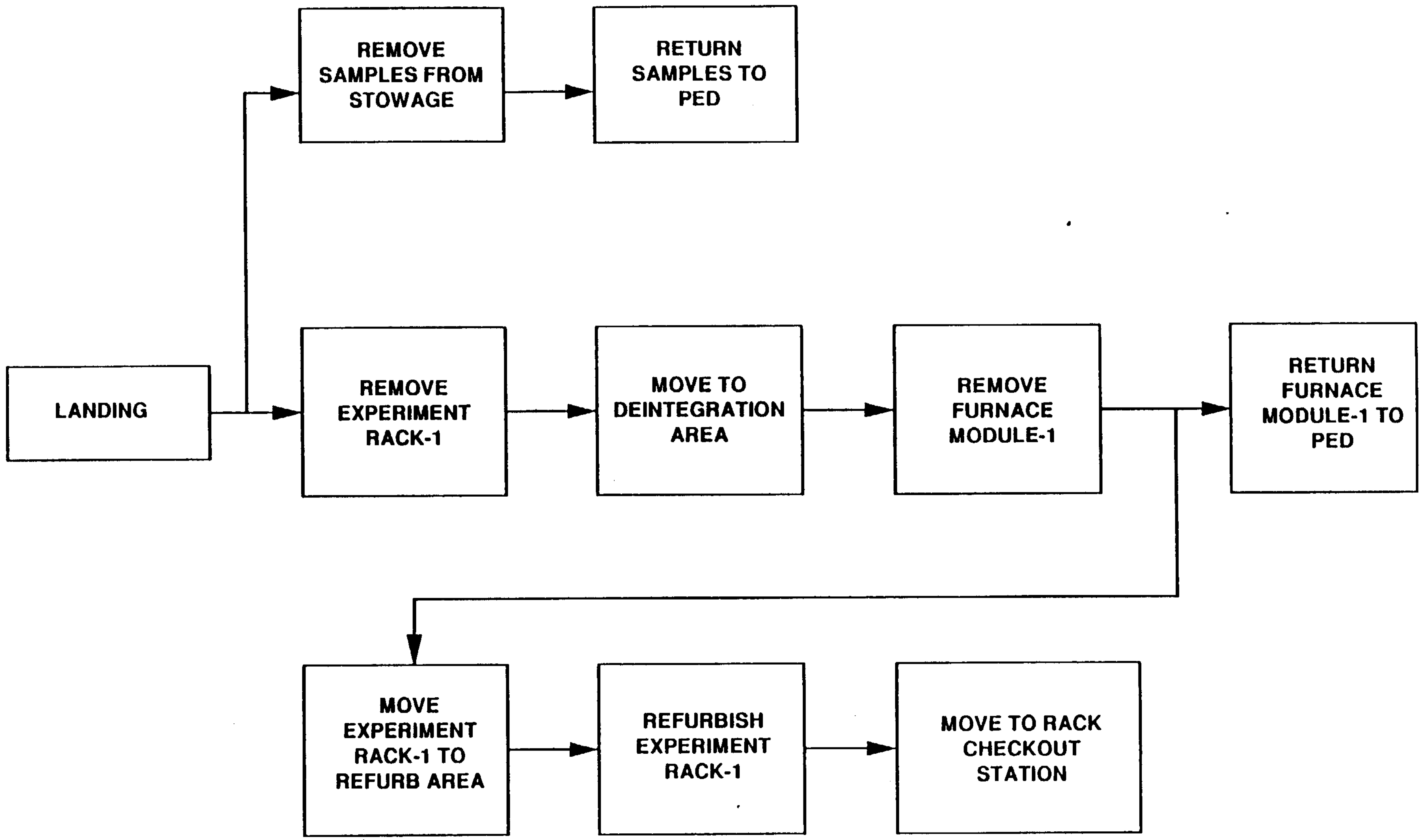



FIGURE 1.9-2. PHYSICAL DEINTEGRATION FLOW

# 1.10. OPERATIONS SUPPORT

Table 1.10-1 describes the physical and operational support required at the Ground Science Operations Control Center during flight of the Space Station Furnace Facility (SSFF).

TABLE 1.10-1. SSFF MISSION OPERATIONS SUPPORT

**COMMUNICATIONS REQUIREMENTS:**

**Downlink Data**

TBD

**Uplink Commands/data**

TBD

**Voice Communications**

TBD

**Video**

TBD

**SUPPORT EQUIPMENT:**

**Description**

TBD

**Dimensions**

TBD

**Power Requirements**

TBD

**Data Interface**

TBD

**REMOTE SITE INTERFACE**

**Location**

TBD

**Describe interfaces**

TBD



C-3

## 1.11. TRAINING OBJECTIVES

Table 1.11-1 correlates the training requirements with the appropriate trainees and trainers, and identifies the source of the training requirements. Table 1.11-2 summarizes the requirements for each training objective.

TABLE 1.11-1. TRAINING PARTICIPATION

| Training Objectives | Trainee | Trainer |
|---|---|---|
| -PED/PI Defined<br><br>TBD | | |
| -PAM and PED/PI Jointly Defined<br><br>TBD | | |
| -PAM Defined<br><br>TBD | | |

TABLE 1.11-2. TRAINING OBJECTIVES (Sheet 1 of 4)

| NO. | TRAINING OBJECTIVE | TRAINEE | RESPONSIBILITY | SIMULATOR Y/N | H/W FIDELITY | S/W Y/N | PROVIDER | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 1.0 | **SCIENCE BACKGROUND** | | | | | | | |
| 1.1 | Present science basis and significance of the SSFF | payload crew, cadre | PED/PI | N | | | | |
| 1.2 | Present operational objectives | payload crew, cadre | PED/PI | N | | | | |
| 1.3 | Present SSFF operational theory | payload crew, cadre | PED/PI | N | | | | |
| 1.4 | Present operations philosophy | payload crew, cadre | PED/PI | N | | | | |
| 2.0 | **SSFF SYSTEMS FAMILIARIZATION** | | | | | | | |
| 2.1 | Characterize the SSFF hardware elements | payload crew, cadre | PED/PI | Y | a | Y | PED/PI | |
| 2.1.1 | Rack location of the FM-1, rack location of the Core | | | | | | | |
| 2.1.2 | FM-1 and subsystem components | | | | | | | |
| 2.1.3 | Module stowage | | | | | | | |
| 2.1.4 | DMS | | | | | | | |

TABLE 1.11-2. TRAINING OBJECTIVES (Sheet 2 of 4)

| NO. | TRAINING OBJECTIVE | TRAINEE | RESPON-SIBILITY | SIMULATOR Y/N | H/W FIDELITY | S/W Y/N | PROVIDER | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 2.2 | Characterize FM-1 software associated with the following: | payload crew, cadre | PED/PI | Y | a | Y | PED/PI | |
| 2.2.1 | DMS | | | | | | | |
| 2.2.2 | FM-1 command capabilities | | | | | | | |
| 2.2.3 | In-flight computer requirements | | | | | | | |
| 2.2.4 | Timeline requirements | | | | | | | |
| 2.2.5 | Furnace Control Units | | | | | | | |
| 2.3 | Characterize FM-1 data collection | payload crew, cadre | PED/PI | Y | a | Y | PED/PI | |
| 2.3.1 | Onboard routing/recording | | | | | | | |
| 2.3.2 | Downkink data and voice | | | | | | | |
| 2.4 | Characterize FM-1 GSE | payload crew, cadre | PED/PI | Y | a | Y | PED/PI | |
| 2.5 | Characterize SSF interface | payload crew, cadre | PED/PI | Y | a | | PED/PI | |
| 2.5.1 | Power, fluids, and thermal interfaces | | | | | | | |
| 2.6 | Characterize the following SSFF operational requirements and constraints: | payload crew, cadre | PED/PI | Y | | | PED/PI | |
| 2.6.1 | Specific attitudes or conditions | | | | | | | |
| 2.6.2 | Microgravity requirements (limiting crew motion and g-level constraints) | | | | | | | |

TABLE 1.11-2. TRAINING OBJECTIVES (Sheet 3 of 4)

| NO. | TRAINING OBJECTIVE | TRAINEE | RESPONSIBILITY | SIMULATOR Y/N | H/W FIDELITY | S/W Y/N | PROVIDER | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 3.0 | **FM-1 OPs FAMILIARIZATION** | | | | | | | |
| 3.1 | Characterize FM-1 nominal operating procedures | payload crew, cadre | PED/PI | | | | PED/PI | |
| 3.1.1 | Power on | | | | | | | |
| 3.1.2 | Sample changeout | | | | | | | |
| 3.1.3 | Power off | | | | | | | |
| 3.1.4 | FM-1 safing and stowage | | | | | | | |
| 4.0 | **FM-1 PROFICIENCY OBJECTIVES** | | | | | | | |
| 4.1 | Provide proficiency training in FM-1 operations | payload crew, cadre | PI/PAM | Y | | | PED/PI/ PAM | |
| 4.2 | Characterize malfunction/ alternate procedures including fault definition | payload crew, cadre | PI/PAM | Y | | | PED/PI/ PAM | |
| 5.0 | **INTEGRATED TIMELINE PROFICIENCY** | | | | | | | |
| 5.1 | Provide additional proficiency training in FM-1 ops as it relates to the joint operations | payload crew, cadre | PI/PAM | Y | | | PED/PI/ PAM | |
| 5.2 | Provide additional training as it pertains to off-nominal procedures for joint operations | payload crew, cadre | PI/PAM | Y | | | PED/PI/ PAM | |
| 5.3 | Provide proficiency training in integrated FM-1 ops including harware/software, SSF/Orbiter/PI interfaces | payload crew, cadre | PI/PAM | Y | | | PED/PI/ PAM | |

TABLE 1.11-2. TRAINING OBJECTIVES (Sheet 4 of 4)

| NO. | TRAINING OBJECTIVE | TRAINEE | RESPON-SIBILITY | SIMULATOR Y/N | H/W FIDELITY | S/W Y/N | PROVIDER | COMMENTS |
|---|---|---|---|---|---|---|---|---|
| 6.0 | **SIMULATIONS** | | | | | | | |
| 6.1 | Conduct MSFC simulations in order to develop proficiency in the following: console operations, handover, voice protocols, crew/cadre/MCC interfaces, integrated payload operations, STS/SSF payload contingency operations | payload crew, cadre | PAM | Y | | | PED/PI/ PAM | |
| 6.2 | Conduct joint integrated simulations in order to demonstrate proficiency in the following: console positions, handover, voice protocols, crew/cadre/MCC interfaces, payload operations, furnace contingency operations, data retrieval systems, operational interfaces between ground control facilities, mission flight rules | | | | | | | |
| 7.0 | **MISSION-INDEPENDENT TRAINING** | | | | | | | |
| 7.1 | Provide STS/SSF mission-independent training | payload crew | PAM/JSC | | | | | |
| 7.2 | Provide mission-independent training | cadrePI/Sim Team | PAM | N | | | | |

## 1.12. ENVIRONMENTAL CONTAMINATION DATA REQUIREMENTS

Tables 1.12-1 and 1.12-2 illustrate the environmental contamination data requirements for the Space Station Furnace Facility (SSFF).

TABLE 1.12-1. FLIGHT ENVIRONMENT LIMITS

| | SENSITIVITY LIMIT | | | | EXPERIMENT GENERATED | | | |
|---|---|---|---|---|---|---|---|---|
| | OPERATING | | NON-OPERATING | | OPERATING | | NON-OPERATING | |
| | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| PARTICULATES<br>Size (micrometers) | | | | | | • <1 micron normal operations<br>• 0.1 to 50 microns following filter changeout | | |
| Number/$m^3$ | | | | | | • <1,000 normal operations<br>• <100,000 following filter changeout | | |
| Composition | | | | | | • Ceramic fibers, copper, steel, platinum, wire insulation, organic particles, and sample-sourced materials, including molybdenum, boron nitride, nickel alloys, quartz, silica, and semiconductor materials | | |
| GASES<br>Composition | | | | | | •Cabin air, or inert pressurant with cleaning solvents and/or water contaminant | | |
| Concentration | | | | | | TBD | | |
| Pressure ($kN/m^2$) | | | | | | • <101.3 for experiment venting<br>• 66.7 for vent of inert pressurants | | |

TABLE 1.12-2. EXTERNAL CONTAMINATION SOURCES

Does experiment/facility release (vent, purge) any material overboard on orbit?
Yes ______ No __X__

| PARAMETER | DESCRIPTION |
|---|---|
| FOs of Occurrence | |
| Frequency | |
| Duration | |
| Composition | |
| Phase State (solid, liquid, or gas) | |
| Quantity or Rate of Release | |

DATA REQUIREMENT (DR) - 10

# EXPERIMENT/FACILITY REQUIREMENTS DOCUMENT FOR THE SPACE STATION FURNACE FACILITY

## SECTION 2: FURNACE MODULE-1 INPUT

MAY 1992

## FOREWORD

The Space Station Furnace Facility (SSFF) Core is designed to accommodate and support a variety of furnace modules throughout the operational lifetime of the facility. Since the SSFF will be operational for 30 years, and various furnace modules will be accommodated, the Experiment/Facility Requirements Document (E/FRD) is divided into two separate sections. Section 1 describes the integrated SSFF-to-SSF interface, which includes the SSFF Core subsystem requirements and the furnace module requirements based on the information obtained from the Furnace Developer's Section 2, and Section 2 describes the furnace module-to-SSFF interface. Multiple Section 2s may be required for each E/FRD, depending on how many furnace modules the SSFF will accommodate per mission, since a separate Section 2 will be written for each furnace module. Both sections will be replaced for each mission with the appropriate mission-peculiar furnace module and interface requirements.

This section describes the Furnace Module-1 requirements. Furnace Module-1 is scheduled to be an upgrade of the present Crystal Growth Furnace (CGF), and this section reflects the requirements of that module.

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## 2.1. FUNCTIONAL OBJECTIVES AND EQUIPMENT IDENTIFICATION

### 2.1.1 SYSTEM DESCRIPTION

The function of Furnace Module-1 is to grow crystals of semiconductor materials and metal and alloys using the directional solidification and vapor transport crystal growth techniques in a microgravity environment (at temperatures up to 1600 °C). Directional solidification is achieved by melting the sample and solidifying the same while applying a thermal gradient along the longitudinal axis of the sample and translating the furnace or the sample. In the case of Furnace Module-1, the furnace is translated.

The Furnace Module-1 system is shown in Figure 2.1-1. It consists of the following primary elements: the Sample Ampoule/Cartridge Assembly (SACA), the base ring, and the experiment apparatus container (EAC) in which the reconfigurable furnace module (RFM), the furnace translation mechanism (FTM), the sample exchange mechanism (SEM), the sample insertion port (SIP) and the internal support structure (ISS) are housed. The ISS, in addition to providing the structural support for the RFM, the FTM, and attach hardware for the plumbing, provides an interface for the SEM which will have the capability to hold up to six sample ampoules. The bottom section of the EAC is attached to the base ring, which includes the feedthroughs for power, data, fluid, and vent lines.

The Space Station Furnace Facility (SSFF) Thermal Control Subsystem (TCS) water loop will provide cooling for the RFM outer shell, the FTS stepping motor, and the SEM ampoule holding head.

The SSFF Gas Distribution Subsystem (GDS) will supply argon and nitrogen to the EAC in order to provide an inert processing atmosphere for crystal growth.

The SACA consists of a sealed ampoule in which the experiment sample material is contained. The SACA accommodates up to six sample thermocouples and has interfaces for sample ampoule/cartridge failure detection sensors.

At least three levels of containment will be provided during sample processing: The SACA, negative $\Delta P$ inside the EAC during processing, and the EAC.

At least two levels of containment will be provided during manual sample exchange: The SACA and the flexible glovebox container.

Multiple purge/vent/backfill will be performed prior to manual sample exchange. In addition, a view port is provided on the EAC for visual inspection of the sample ampoules by a crew-member. It is also planned to mount mirrored witness plates inside the EAC to augment

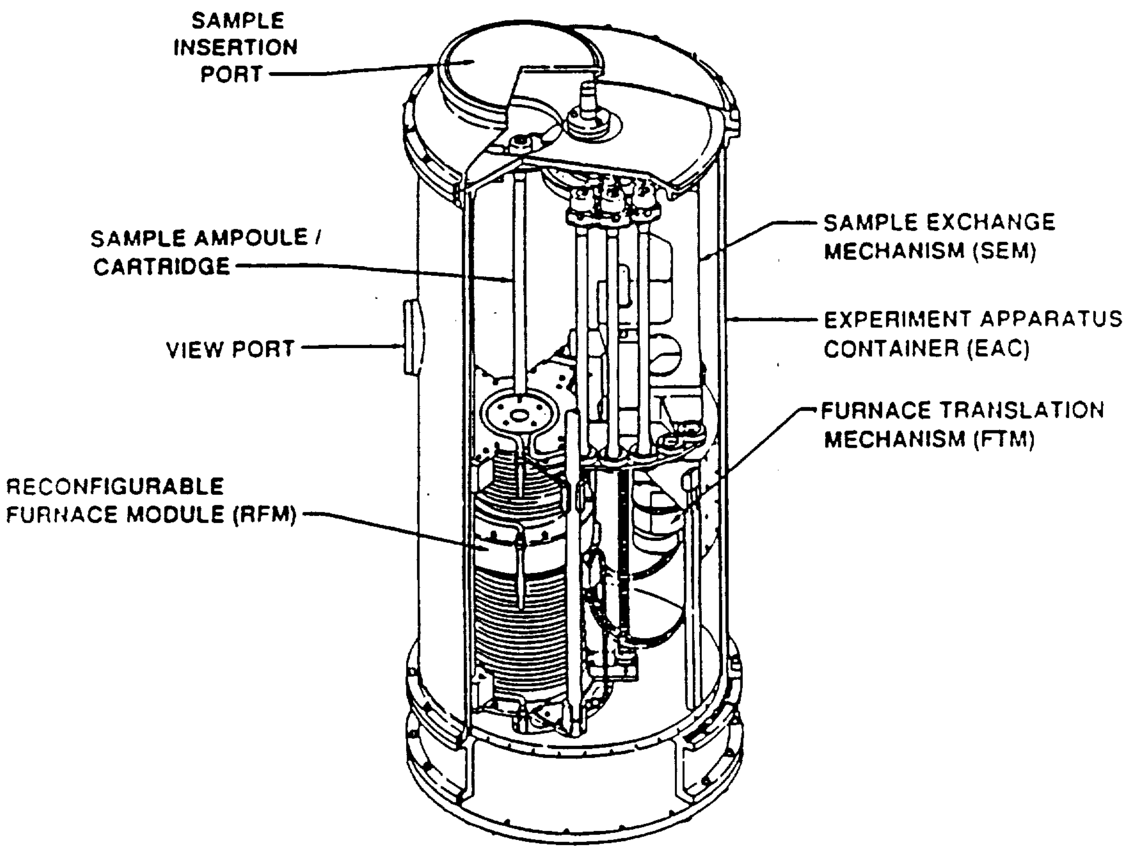



FIGURE 2.1-1. FURNACE MODULE-1 PICTORIAL REPRESENTATION

visual inspection for detecting any vapor deposition that may have resulted from the sample ampoule/cartridge failure. The design will be compatible with the SSFF.

### 2.1.2 FUNCTIONAL OBJECTIVES

There are nine functional objectives (FOs) for Furnace Module-1 which are structured as one FO for sample exchange, one FO for venting and purging, five FOs for sample processing, one FO for sample loading or shutdown, and one FO for calibration/bakeout. The actual FO numbering is as follows:

- FO-3 Furnace Module-1 Sample Exchange
- FO-4 Furnace Module-1 Vent/Purge
- FO-5 Furnace Module-1 Process Sample HgCdTe
- FO-6 Furnace Module-1 Process Sample HgZnTe
- FO-6A Furnace Module-1 Process Sample Extended HgZnTe
- FO-7 Furnace Module-1 Process Sample CdTe
- FO-8 Furnace Module-1 Process Sample GaAs
- FO-9 Configure Furnace Module-1 for Sample Loading or Shutdown
- FO-11 Furnace Module-1 Process Calibration/Bakeout

Table 2.1-1 shows a listing of the Furnace Module-1 FOs along with the equipment associated with each step of each FO. Step duration, crew time requirements, and average power requirements for each step of each FO are defined in Table 2.1-2, Functional Objective Requirements Sheets.

### 2.1.3 EQUIPMENT IDENTIFICATION

Figure 2.1-2 identifies the Furnace Module-1 components in a block diagram format. Figure 2.1-3 identifies the Furnace Module-1 to SSFF interfaces.

### 2.1.4 OPERATIONAL FUNCTIONAL FLOWS

Preliminary functional flows are shown in Table 2.1-3 for each FO. Functional flows define the function performed, the performing element, and decisions involved in accomplishing each FO.

TABLE 2.1-1. FURNACE MODULE-1 FUNCTIONAL OBJECTIVES (Sheet 1 of 3)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-3 | Manual Sample Exchange | Crew Interaction Required |
| Step 1 | Command Manual Exchange | DMS |
| Step 2 | Vent/Fill EAC | GDS |
| Step 3 | Equalize EAC Pressure | GDS, DMS |
| Step 4 | Prep Equipment | |
| Step 5 | Open SIP | EAC |
| Step 6 | Insert Samples | EAC |
| Step 7 | Close Sip | EAC |
| Step 8 | Open Valves | |
| Step 9 | Command Man. Exchange Off | DMS |
| Step 10 | Perform Seal Check | DMS, GDS |
| Step 11 | Load List process | DMS |
| | | |
| FO-4 | Purge EAC | |
| Step 1 | $GN_2$ Purge Furnace | DMS, GDS |
| Step 2 | Argon Backfill | DMS, GDS |
| Step 3 | Command Sample Process | DMS |
| Step 4 | TCS Configured | TCS |
| | | |
| FO-5 | Vapor Crystal Growth of HgCdTe | |
| Step 1 | Activate Furnace for Processing | GDS, TCS, DMS |
| Step 2 | Activate and Process Heat Cycle | GDS, TCS, DMS |
| Step 3 | Anneal Sample | GDS, TCS, DMS |
| Step 4 | Initiate Vapor Crystal Growth Processing | GDS, TCS, DMS |
| Step 5 | Cool Sample and Extract | GDS, TCS, DMS |
| Step 6 | Cool and Stow | |

TABLE 2.1-1. FURNACE MODULE-1 FUNCTIONAL OBJECTIVES (Sheet 2 of 3)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-6 | Meltback and Regrowth of HgZnTe | |
| Step 1 | Activate Furnace for Processing | GDS, TCS, DMS |
| Step 2 | Process Heat Cycle | GDS, TCS, DMS |
| Step 3 | Initial Soak | GDS, TCS, DMS |
| Step 4 | Translation to Growth Position | GDS, TCS, DMS |
| Step 5 | Final Soak | GDS, TCS, DMS |
| Step 6 | Directional Solidification | GDS, TCS, DMS |
| Step 7 | Cool Sample | GDS, TCS, DMS |
| Step 8 | Stow Sample | GDS, TCS, DMS |
| FO-6A | Meltback and Regrowth of HgZnTe (extended) | |
| Step 1 | Activate Furnace for Processing | GDS, TCS, DMS |
| Step 2 | Process Heat Cycle | GDS, TCS, DMS |
| Step 3 | Initial Soak | GDS, TCS, DMS |
| Step 4 | Translation to Growth Position | GDS, TCS, DMS |
| Step 5 | Final Soak | GDS, TCS, DMS |
| Step 6 | Directional Solidification | GDS, TCS, DMS |
| Step 7 | Cool Sample | GDS, TCS, DMS |
| Step 8 | Stow Sample | GDS, TCS, DMS |
| FO-7 | Growth of CdTe by Dir. Solidification | |
| Step 1 | Activate Furnace for Processing | GDS, TCS, DMS |
| Step 2 | Process Heat Cycle | GDS, TCS, DMS |
| Step 3 | Soak | GDS, TCS, DMS |
| Step 4 | Process Sample, Directional Solidification | GDS, TCS, DMS |
| Step 5 | Cool Sample to 400 °C | GDS, TCS, DMS |
| Step 6 | Cool Sample to 200 °C and Stow Sample | GDS, TCS, DMS |

TABLE 2.1-1. FURNACE MODULE-1 FUNCTIONAL OBJECTIVES (Sheet 3 of 3)

| FUNCTIONAL OBJECTIVE | | EQUIPMENT REQUIRED |
|---|---|---|
| NUMBER | TITLE | ITEM |
| FO-8 | Growth of GaAs by Dir. Solidification | |
| Step 1 | Activate Furnace Processing | GDS, TCS, DMS |
| Step 2 | Preheat Cycle | GDS, TCS, DMS |
| Step 3 | Process Heat Cycle | GDS, TCS, DMS |
| Step 4 | Soak | GDS, TCS, DMS |
| Step 5 | Translate Furnace/Process Sample | GDS, TCS, DMS |
| Step 6 | Cool Down to 800 °C | GDS, TCS, DMS |
| Step 7 | Cool Down to 200 °C and Stow | GDS, TCS, DMS |
| FO-9 | Configure Furnace for Shutdown/Sample Loading | |
| Step 1 | Verify Furnace Is in Home Position | DMS |
| Step 2 | Furnace Specific Tests | DMS |
| Step 3 | Secure Power From Furnace Module | DMS |
| FO-11 | Furnace Calibration/Bakeout | |
| Step 1 | Activate Calibration/Bakeout | DMS |
| Step 2 | Initiate Calibration | DMS |
| Step 3 | Bakeout/Calibration Process | DMS |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 1 of 13)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Manual Sample Exchange

NO. OF PERFORMANCES: MIN.______ DES.______

REQUIRED TIMEFRAME (MET): MIN. ____ MAX.______

FO NUMBER: 3

PREREQUISITE: FO-2

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 1:00 | 32:00 | 10:00 | 10:00 | 7:00 | 20:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | 1 | | 1 | 1 | 1 | 1 |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 0 | 0 | 0 | 0 | 0 | 0 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | | |
| | VIDEO | STANDARD/NONSTANDARD NTSC | | | | | | |
| | | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Command "Manual Sample Exchange" on |
| 2 | Vent/fill furnace module |
| 3 | Equalize furnace module pressure |
| 4 | Prep equipment |
| 5 | Open SIP |
| 6 | Insert samples |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 2 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Manual Sample Exchange
NO. OF PERFORMANCES: MIN.________ DES.________
REQUIRED TIMEFRAME (MET): MIN.____ MAX.________

FO NUMBER: 3
PREREQUISITE: FO-2
SEQUENCE: ________
JOINT OPS WITH: ________

| STEP NUMBER | | | 7 | 8 | 9 | 10 | 11 | |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 3:00 | 3:00 | 1:00 | 65:00 | 4:00 | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | 1 | 1 | 1 | 1 | 1 | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | 0 | 0 | 0 | 0 | 0 | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Close SIP |
| 8 | Open valves |
| 9 | Command "Manual Sample Exchange" off |
| 10 | Perform seal check |
| 11 | Load list process |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 3 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Purge Furnace Module
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN. _____ MAX._____

FO NUMBER: 4
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 32:00 | 10:00 | 2:00 | 2:00 | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 0 | 0 | 0 | 0 | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | GN2 purge furnace |
| 2 | Argon backfill |
| 3 | Command sample process |
| 4 | TCS configured |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 4 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NUMBER: 5
FO NAME: Vapor Crystal Growth of HgCdTe
PREREQUISITE: FO-3
NO. OF PERFORMANCES: MIN.____ DES.____
SEQUENCE: ____
REQUIRED TIMEFRAME (MET): MIN. ____ MAX.____
JOINT OPS WITH: ____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 188:00 | 60:00 | 480:00 | 240:00 | 21:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .120 | 1.116 | .466 | .466 | .120 | .120 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Activate and process heat cycle |
| 3 | Anneal sample |
| 4 | Initiate vapor crystal growth processing |
| 5 | Cool sample and extract |
| 6 | Cool and stow |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 5 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Meltback and Regrowth of HgZnTe
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN._____ MAX._____

FO NUMBER: 6
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 340:00 | 120:00 | 125:00 | 600:00 | 7390:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .120 | .598 | .516 | .516 | .516 | .516 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Process heat cycle |
| 3 | Initial soak |
| 4 | Translation to growth position |
| 5 | Final soak |
| 6 | Directional solidification |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 6 of 13)

EXPERMENT NAME: Space Station Furnace Facility FO NUMBER: 6

FO NAME: Meltback & Regrowth of HgZnTe PREREQUISITE: FO-3

NO. OF PERFORMANCES: MIN._____ DES._____ SEQUENCE: _____

REQUIRED TIMEFRAME (MET): MIN._____ MAX._____ JOINT OPS WITH: _____

| STEP NUMBER | | 7 | 8 | | | | |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 372:00 | 115:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .191 | .061 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool sample |
| 8 | Stow sample |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 7 of 13)

EXPERMENT NAME: Space Station Furnace Facility

FO NAME: Meltback and Regrowth of HgZnTe (Extended)

NO. OF PERFORMANCES: MIN._____ DES._____

REQUIRED TIMEFRAME (MET): MIN. _____ MAX._____

FO NUMBER: 6A

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 340:00 | 120:00 | 125:00 | 600:00 | 59957:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .120 | .598 | .516 | .516 | .516 | .516 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD· NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace for processing |
| 2 | Process heat cycle |
| 3 | Initial soak |
| 4 | Translation to growth position |
| 5 | Final soak |
| 6 | Directional solidification |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 8 of 13)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 6 A

FO NAME: Meltback and Regrowth of HgZnTe (Extended)

PREREQUISITE: FO-3

NO. OF PERFORMANCES: MIN.______ DES.______

SEQUENCE: ______

REQUIRED TIMEFRAME (MET): MIN.____ MAX.______

JOINT OPS WITH: ______

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| STEP NUMBER | | 7 | 8 | | | | |
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 372:00 | 115:00 | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .191 | .061 | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool sample |
| 8 | Internally stow sample |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 9 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Growth of CdTe by Directional Solidification
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN. _____ MAX._____

FO NUMBER: 7
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | 3:00 | 538:00 | 120:00 | 4278:00 | 438:00 | 208:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | | .120 | 1.345 | 1.241 | 1.166 | .591 | .241 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace module for processing |
| 2 | Process heat cycle |
| 3 | Soak |
| 4 | Process sample, directional solidification |
| 5 | Cool sample to 400 °C |
| 6 | Cool sample to 200 °C and internally stow sample |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 10 of 13)

EXPERMENT NAME: Space Station Furnace Facility  FO NUMBER: 8
FO NAME: Growth of GaAs by directional Solidification  PREREQUISITE: FO-3
NO. OF PERFORMANCES: MIN.____ DES.____  SEQUENCE: ____
REQUIRED TIMEFRAME (MET): MIN.____ MAX.____  JOINT OPS WITH: ____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 45:00 | 227:00 | 68:00 | 720:00 | 210:00 |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .120 | .858 | 2.353 | 1.344 | 1.259 | .668 |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate furnace module processing |
| 2 | Preheat cycle |
| 3 | Process heat cycle |
| 4 | Soak |
| 5 | Translate furnace/process sample |
| 6 | Cool down to 800 °C |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 11 of 13)

EXPERMENT NAME: Space Station Furnce Facility

FO NAME: Growth of GaAs by Directional Solidification

NO. OF PERFORMANCES: MIN._____ DES._____

REQUIRED TIMEFRAME (MET): MIN._____ MAX._____

FO NUMBER: 8

PREREQUISITE: FO-3

SEQUENCE:

JOINT OPS WITH:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| STEP NUMBER | | 7 | | | | | | |
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | 466:00 | | | | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | | |
| | MAXIMUM | | | | | | | |
| | PREFERRED | | | | | | | |
| CREW | NUMBER | | | | | | | |
| | PREFERRED | | | | | | | |
| MICROGRAVITY (g's) | | | | | | | | |
| VACUUM VENT | | | | | | | | |
| CONSUMABLES | | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | .120 | | | | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | | |
| | COMMANDING | | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 7 | Cool down to 200 °C and internally stow |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 12 of 13)

EXPERMENT NAME: Space Station Furnace Facility

FO NUMBER: 9

FO NAME: Configure Furnace for Shutdown/Sample loading

PREREQUISITE: _____

NO. OF PERFORMANCES: MIN. _____ DES. _____

SEQUENCE: _____

REQUIRED TIMEFRAME (MET): MIN. _____ MAX. _____

JOINT OPS WITH: _____

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 3:00 | 5:00 | 1:00 | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 0 | 0 | 0 | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Verify furnace is in home position |
| 2 | Furnace specific tests |
| 3 | CCU secures power from furnace module |

TABLE 2.1-2. FUNCTIONAL OBJECTIVE REQUIREMENTS SHEET (Sheet 13 of 13)

EXPERMENT NAME: Space Station Furnace Facility
FO NAME: Furnace Calibration/Bakeout
NO. OF PERFORMANCES: MIN._____ DES._____
REQUIRED TIMEFRAME (MET): MIN. ____ MAX. -

FO NUMBER: 11
PREREQUISITE: FO-3
SEQUENCE:
JOINT OPS WITH:

| STEP NUMBER | | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| STEP DURATION (MINS:SECS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | 1:00 | 1:00 | 300:00 | | | |
| STEP DELAY (HRS:MINS) | MINIMUM | | | | | | |
| | MAXIMUM | | | | | | |
| | PREFERRED | | | | | | |
| CREW | NUMBER | | | | | | |
| | PREFERRED | | | | | | |
| MICROGRAVITY (g's) | | | | | | | |
| VACUUM VENT | | | | | | | |
| CONSUMABLES | | | | | | | |
| AVERAGE POWER REQUIRED (kW) | | 2.1336 | 2.1336 | 2.330 | | | |
| ONBOARD COMPUTER SUPPORT | CORE APPLICATIONS | | | | | | |
| | EXPERIMENT APPLICATIONS | | | | | | |
| DATA | DOWNLINK DIGITAL (MBPS) | | | | | | |
| | REALTIME (RT) OR DUMP (D) | | | | | | |
| | COMMANDING | | | | | | |
| | PES (P), ISE (I), MPAC (M), POCC (PC) | | | | | | |
| | VIDEO STANDARD/NONSTANDARD NTSC | | | | | | |
| | REAL-TIME/DUMP/STORE | | | | | | |
| SPECIAL EQUIPMENT OR CONSTRAINTS | | | | | | | |

| STEP NO. | STEP DESCRIPTION |
|---|---|
| 1 | Activate calibration/bakeout |
| 2 | Initiate calibration |
| 3 | Bakeout/calibration process |

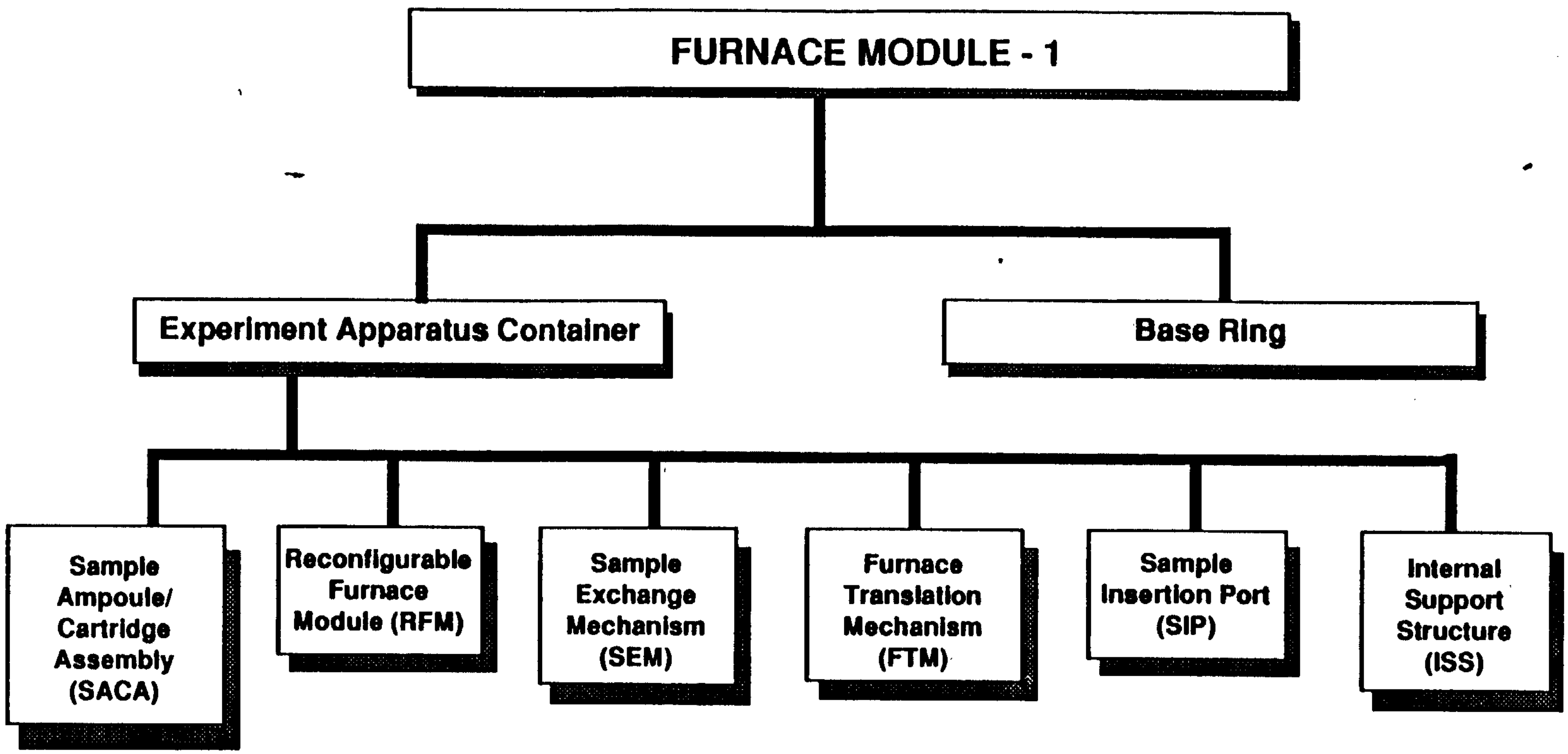



FIGURE 2.1-2. FURNACE MODULE-1 COMPONENT TREE

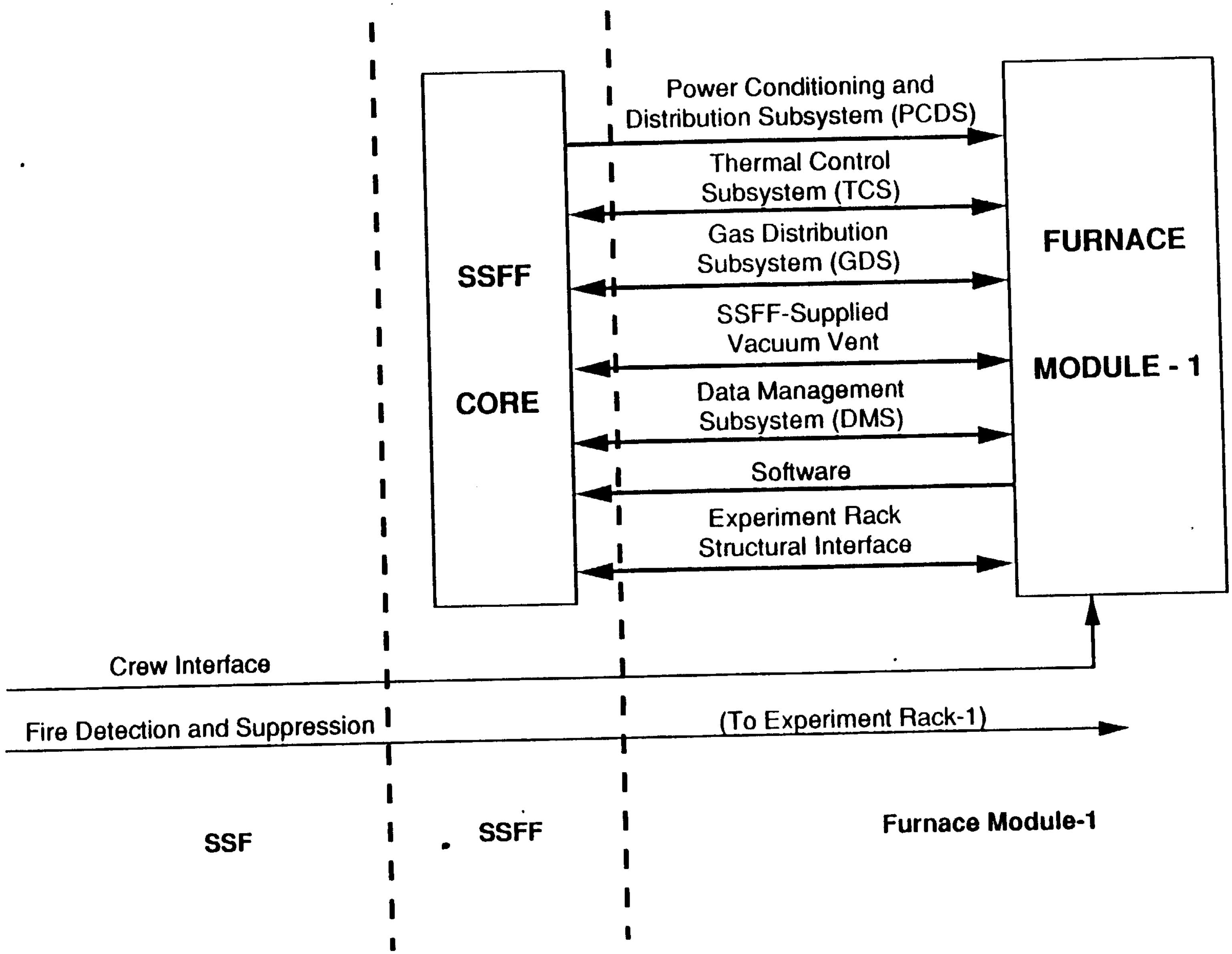



FIGURE 2.1-3. FURNACE MODULE-1 TO SSFF/SSF INTERFACE DIAGRAM

TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 1 of 12)

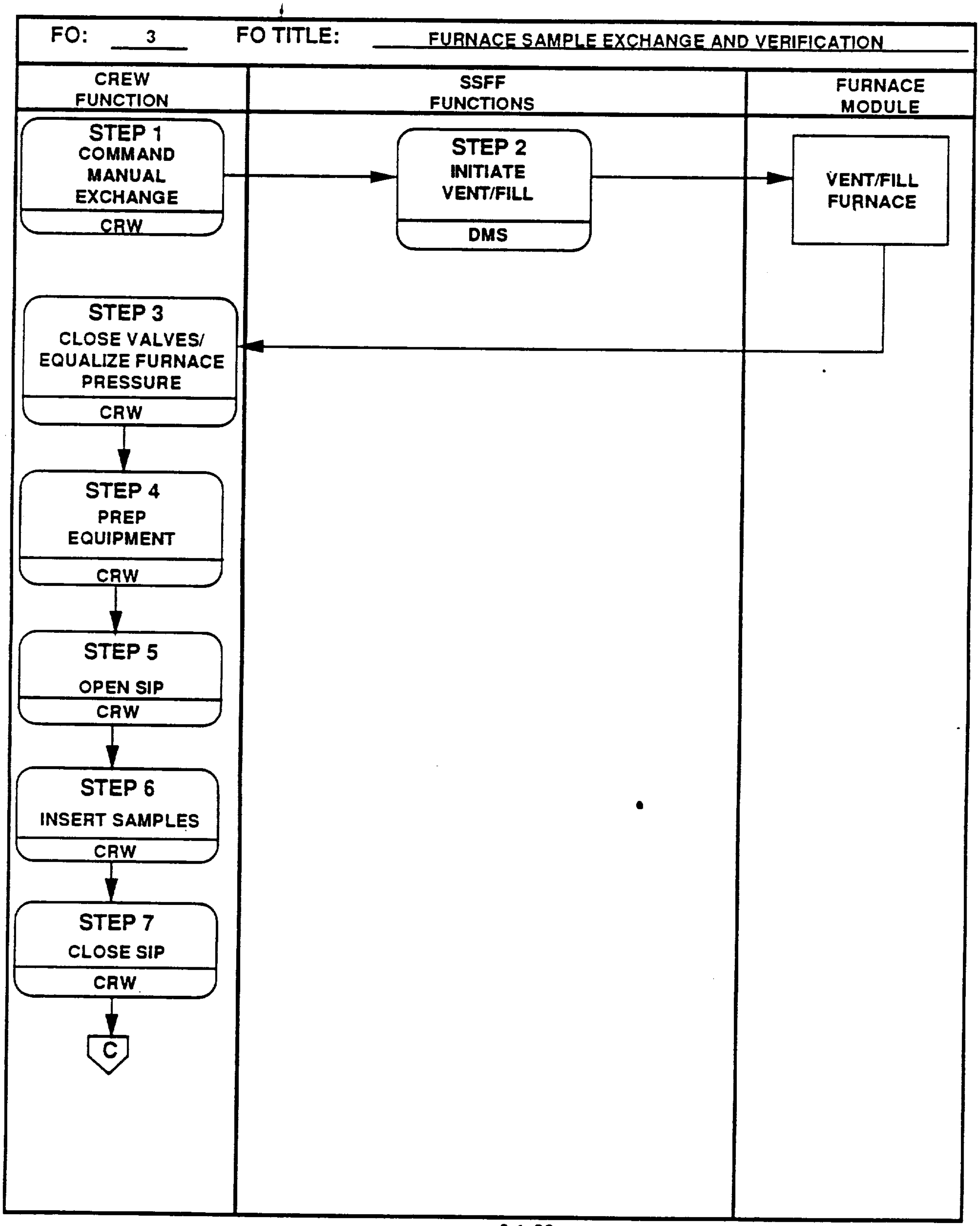


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 2 of 12)

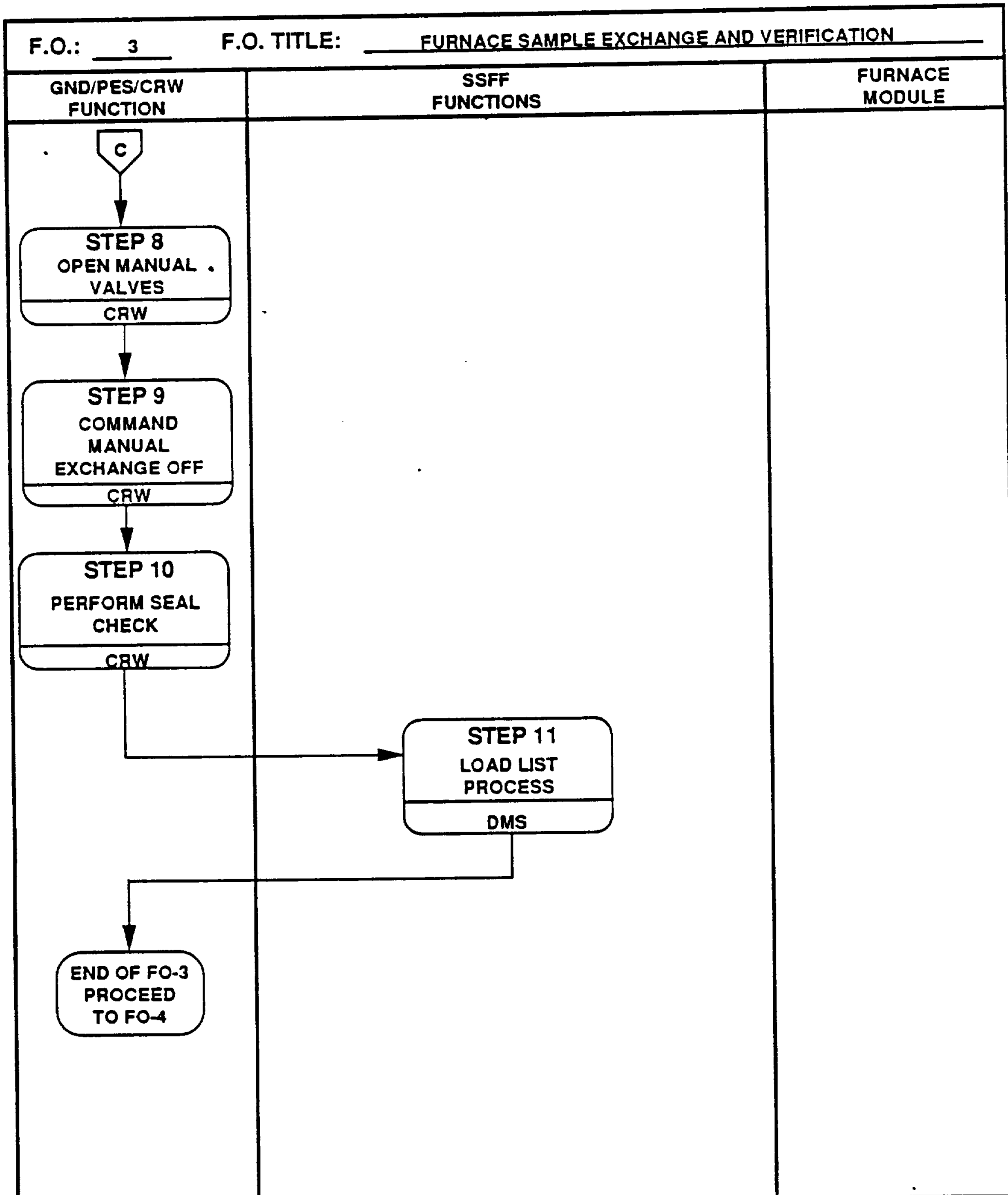


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 3 of 12)

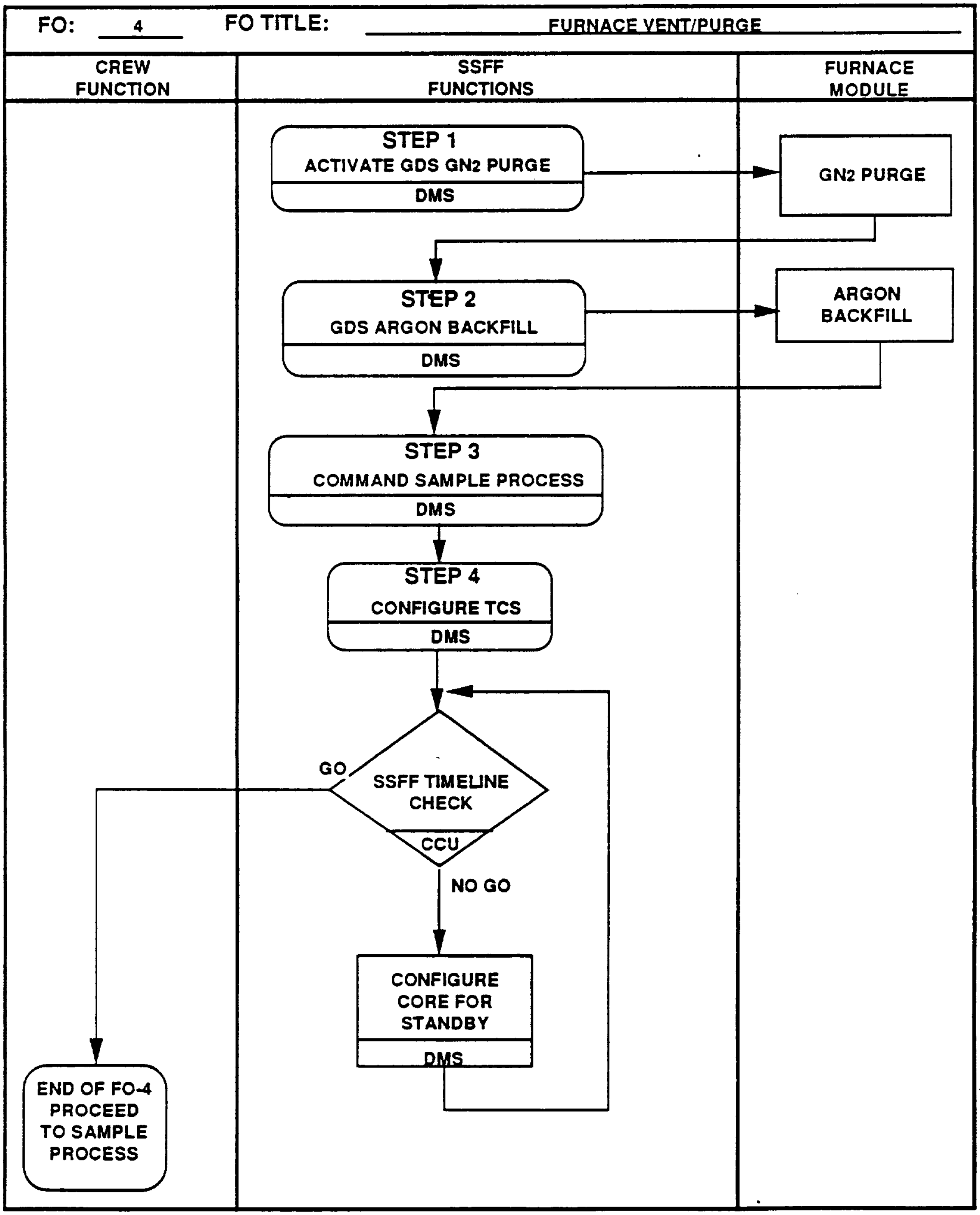


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 4 of 12)

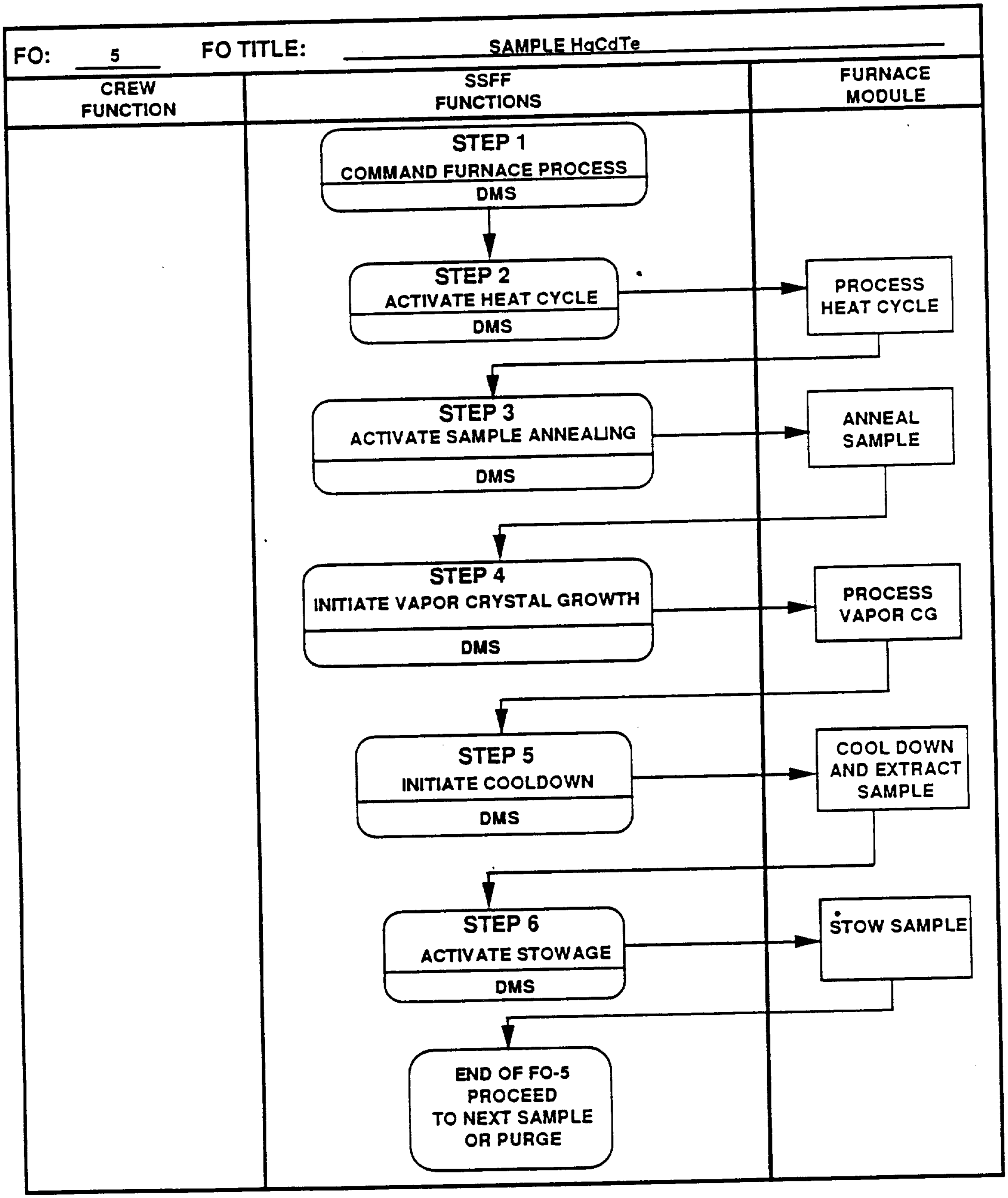


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 5 of 12)

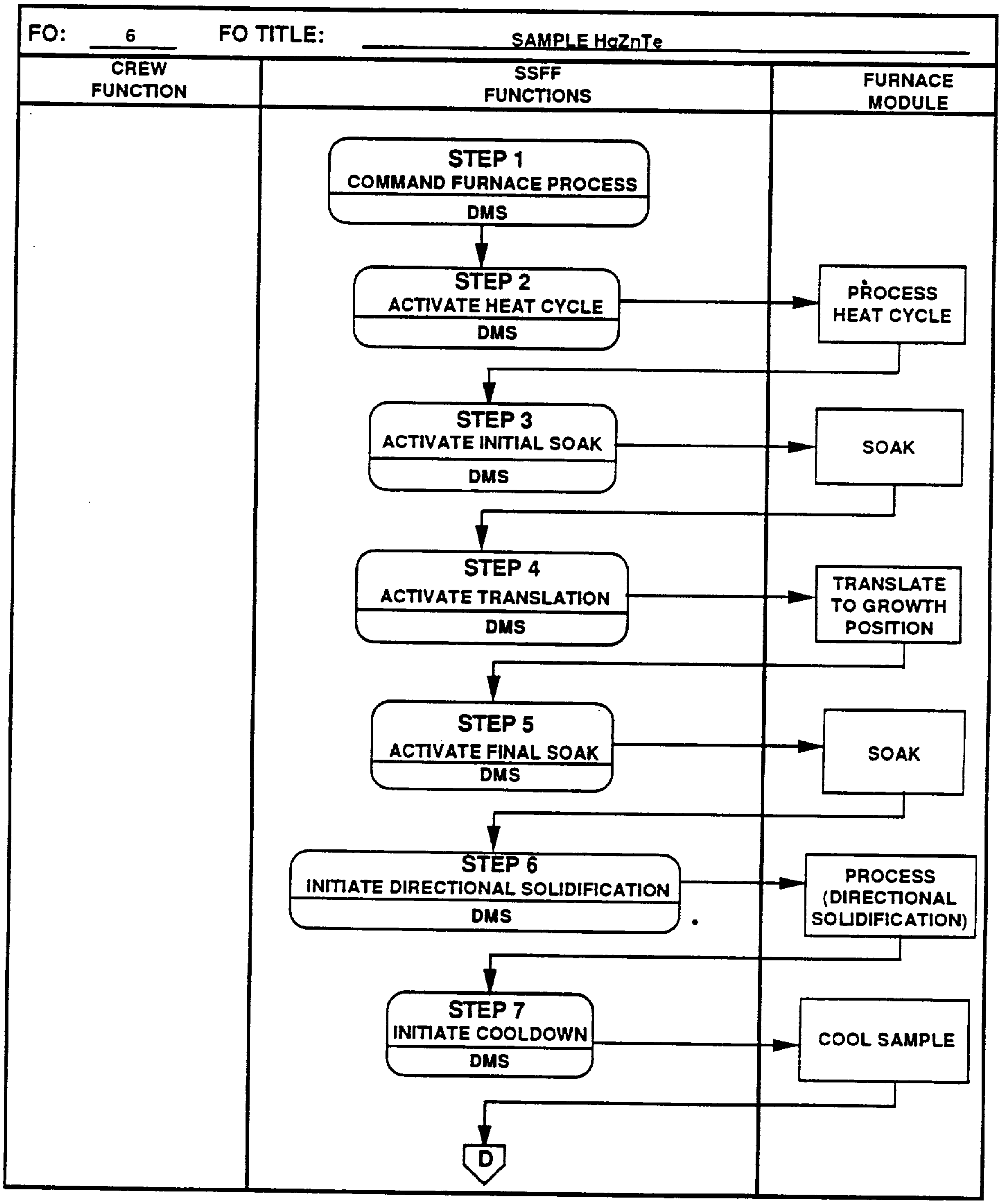


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 6 of 12)

| FO: 6 | FO TITLE: SAMPLE HgZnTe | |
|---|---|---|
| CREW FUNCTION | SSFF FUNCTIONS | FURNACE MODULE |

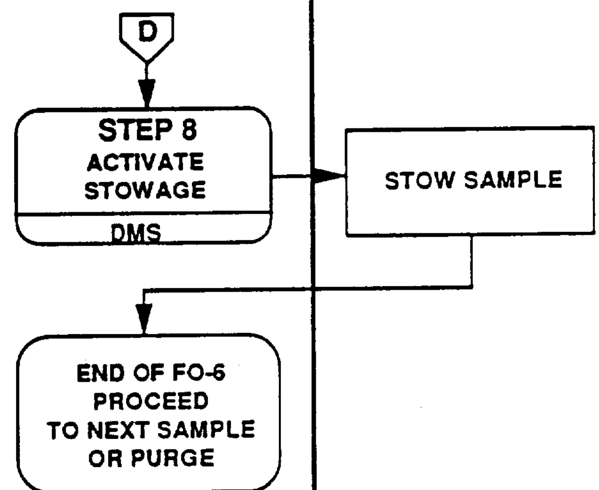


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 7 of 12)

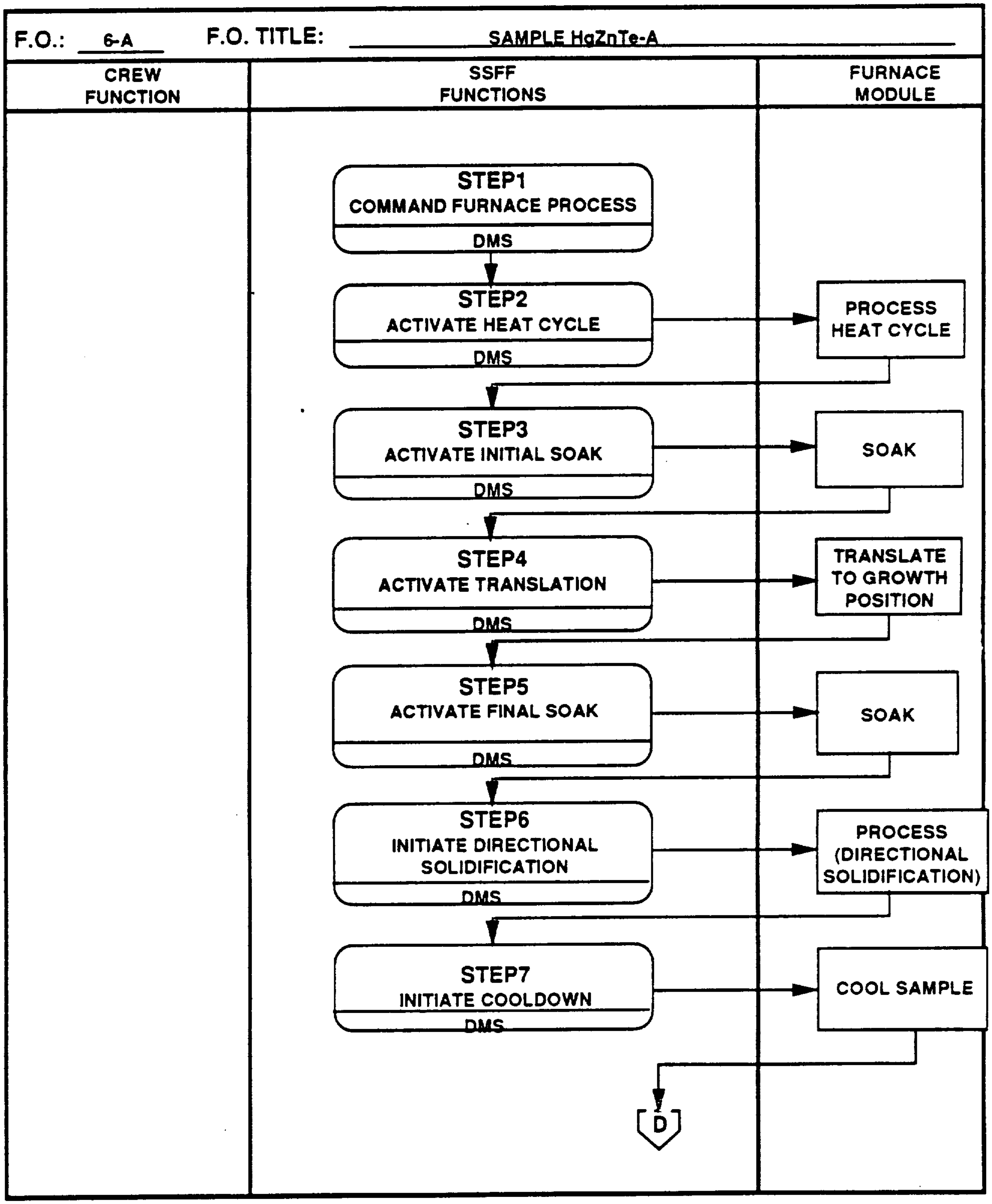


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 8 of 12)

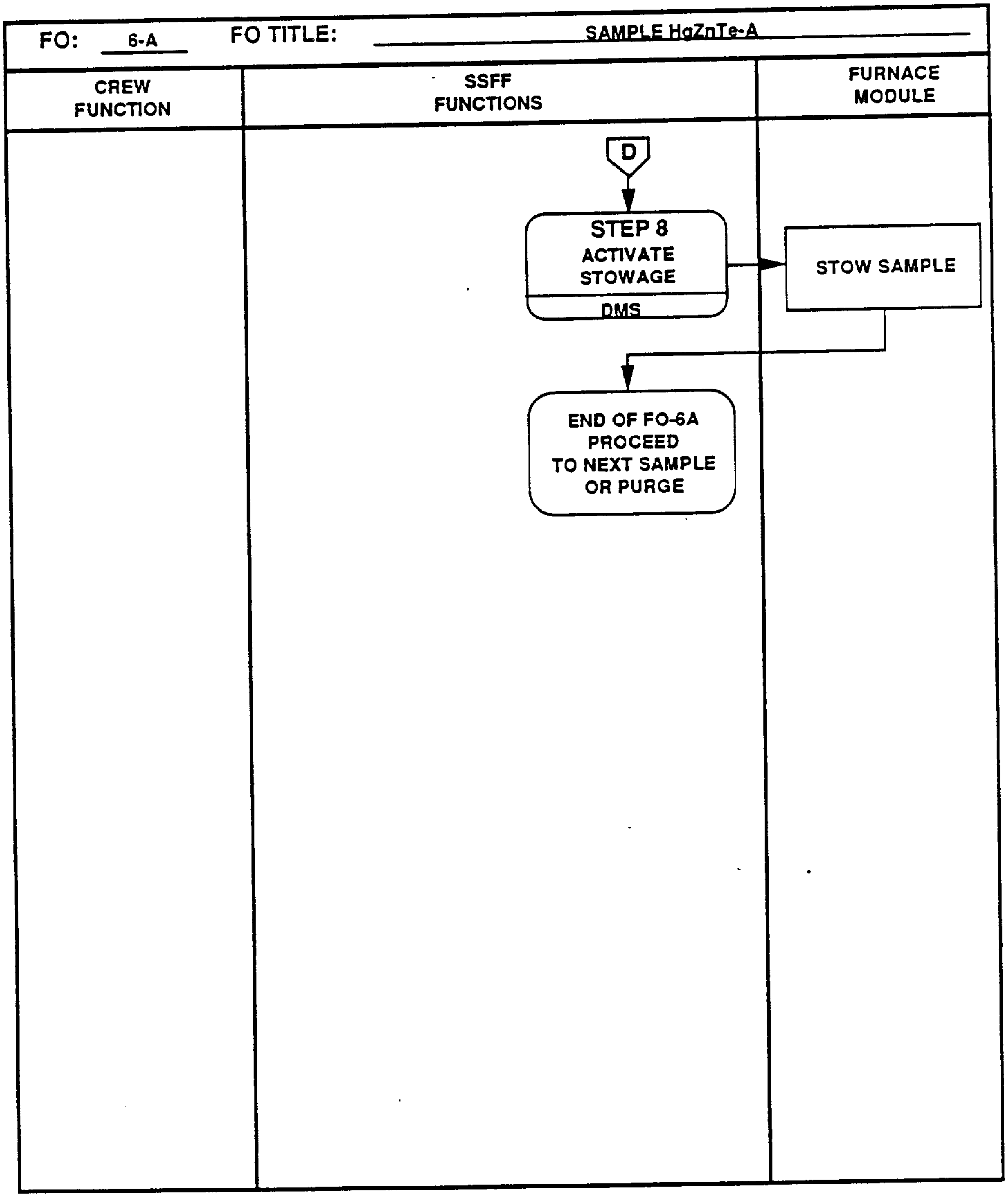


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 9 of 12)

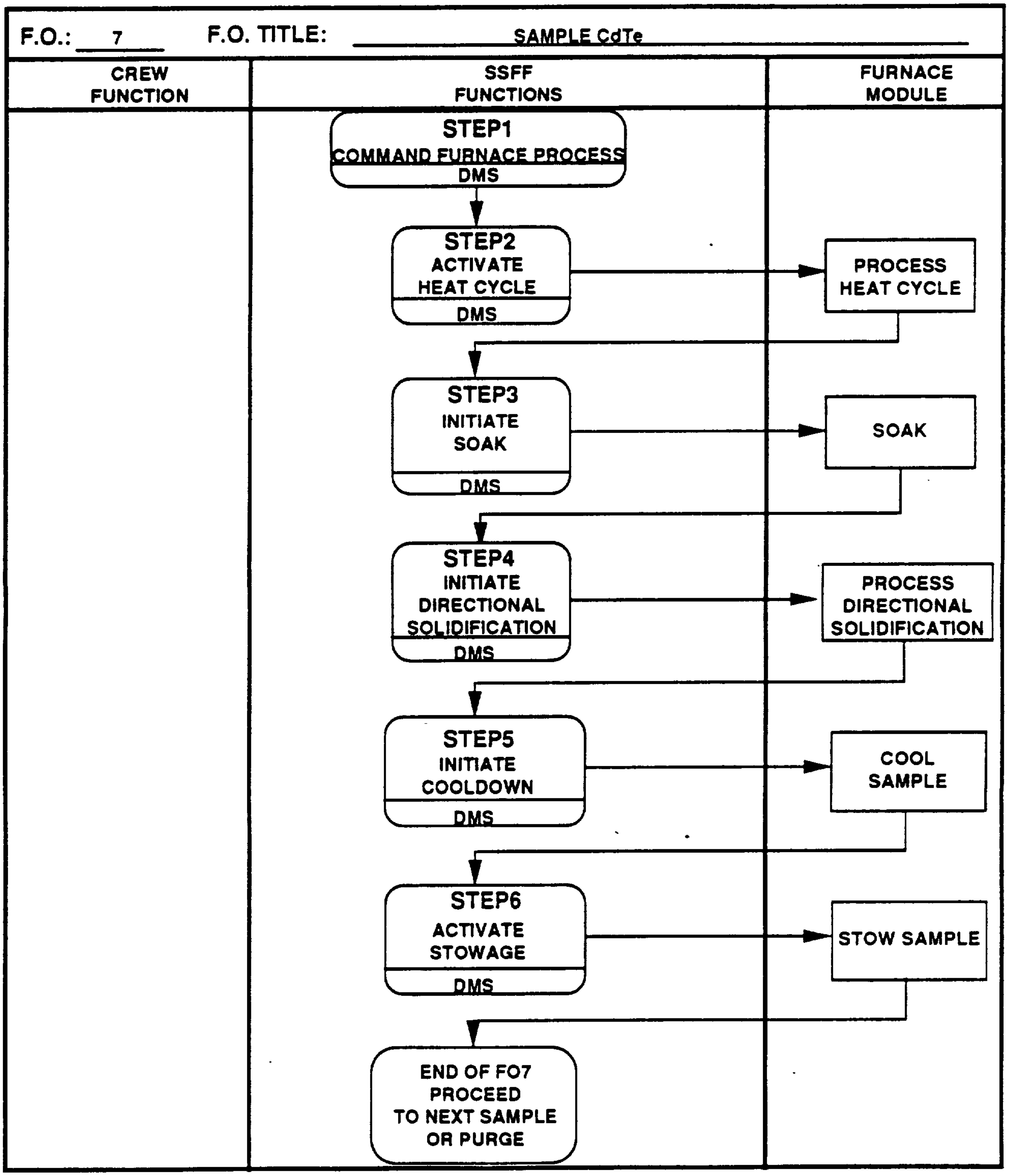


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 10 of 12)

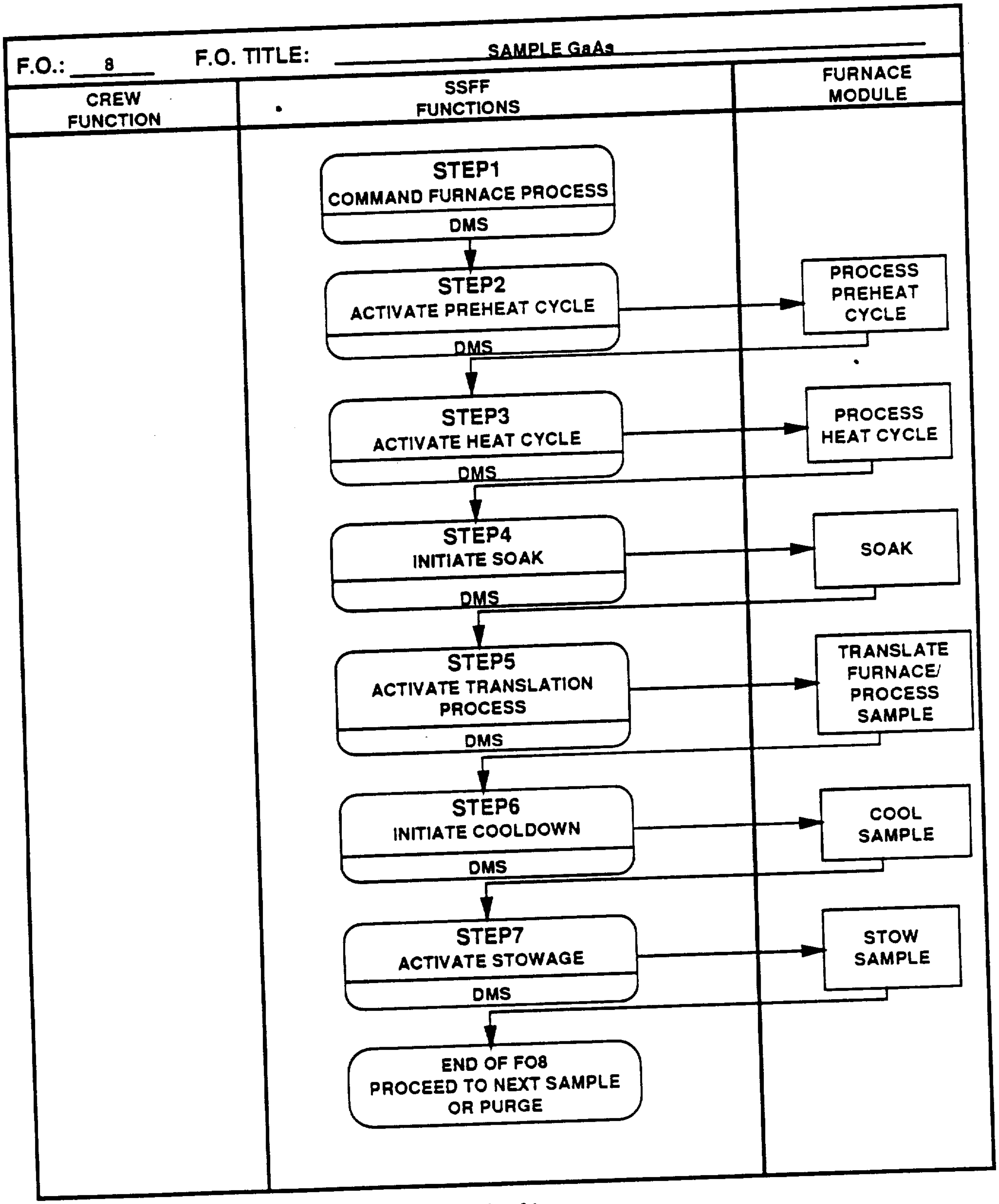


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 11 of 12)

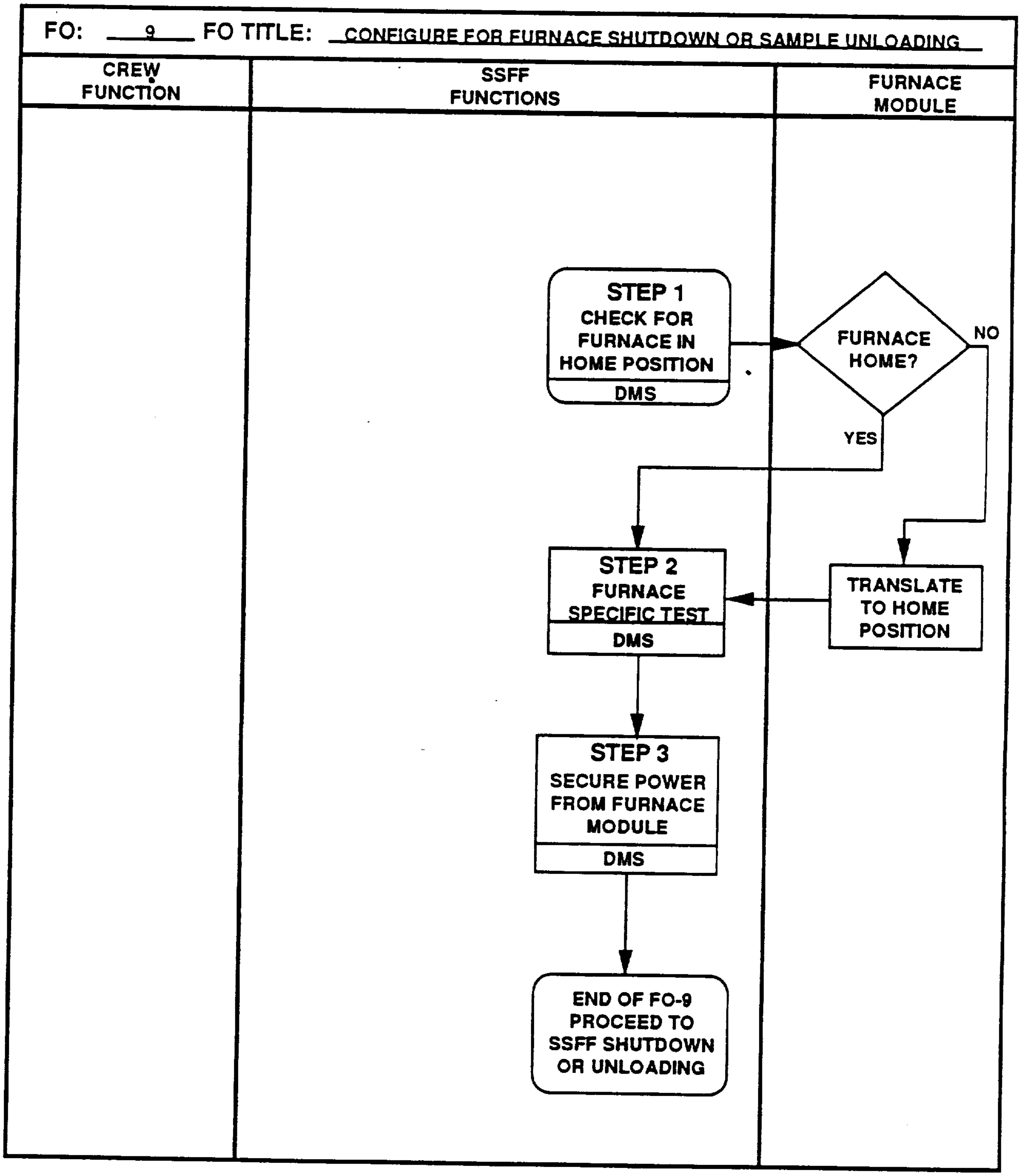
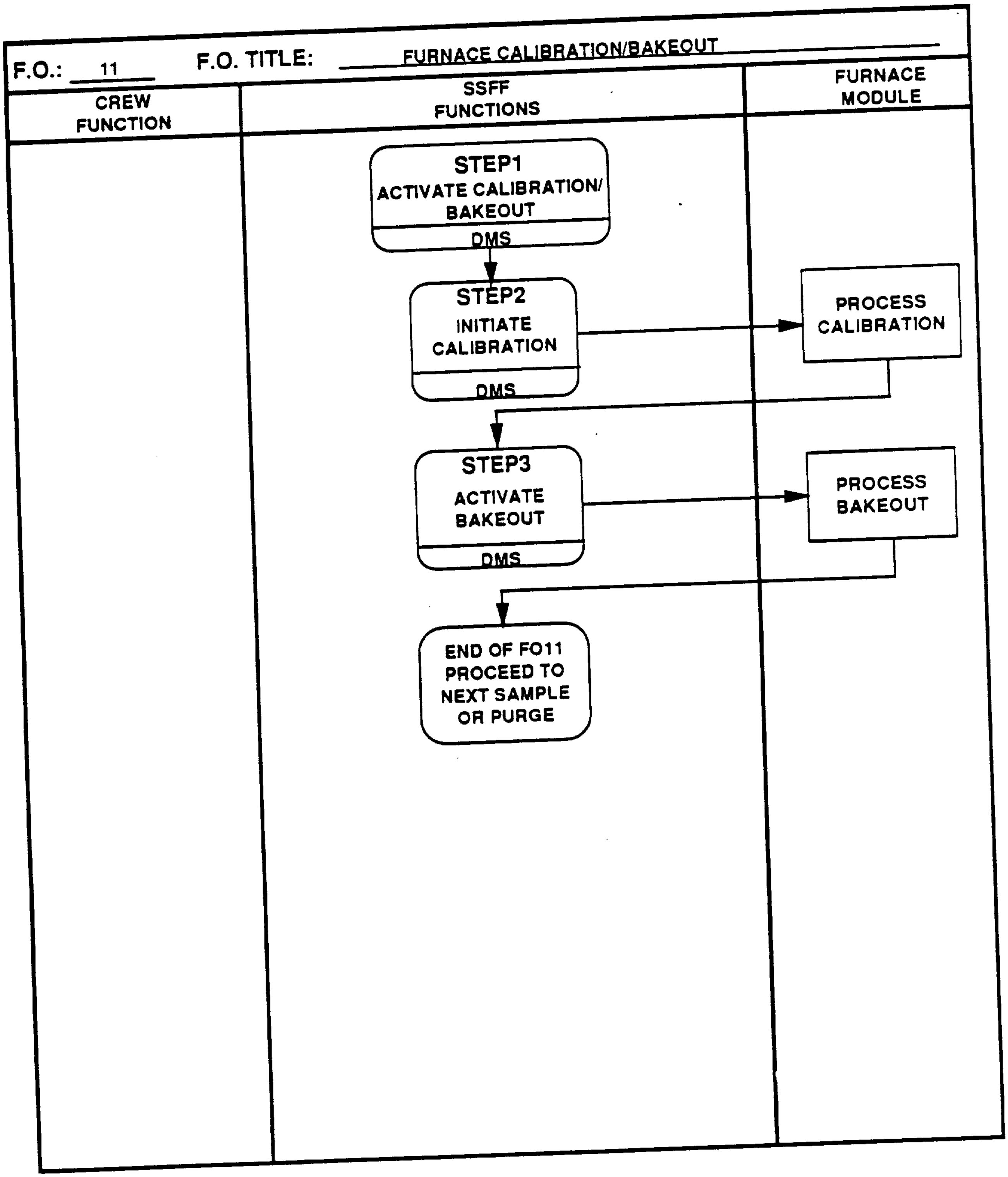


TABLE 2.1-3. FURNACE MODULE-1 OPERATIONAL FUNCTIONAL FLOW (Sheet 12 of 12)



## 2.2. STRUCTURAL/MECHANICAL

Furnace Module-1 will be mounted in the Space Station Furnace Facility (SSFF) Experiment Rack-1. The physical and functional interfaces defined herein between Furnace Module-1 and SSFF, and Furnace Module-1 and Space Station Freedom (SSF) are as follows:

- Furnace Module-1 to SSFF Experiment Rack-1
- Furnace Module-1 cooling jacket to SSFF Thermal Control System (TCS)
- Furnace Module-1 electrical connection to SSFF Power Conditioning and Distribution System (PCDS) .
- Furnace Module-1 to SSFF-supplied argon and nitrogen
- Furnace Module-1 to SSFF-supplied vacuum vent
- Furnace Module-1 Data Management System (DMS) connections to SSFF DMS
- Furnace Module-1 software to SSFF software
- Furnace Module-1 to crew interface

### 2.2.1 EQUIPMENT LIST AND MASS PROPERTIES

Mass properties of Furnace Module-1 are shown in Table 2.2-1. Stowage items and their properties are shown in Table 2.2-2.

### 2.2.2 INTERFACE DETAIL

#### 2.2.2.1 Furnace Module-1 to SSFF Experiment Rack-1

The Furnace Module-1 will interface with the experiment rack by way of the experiment apparatus container (EAC) base ring. The EAC connector locations for the TCS, PCDS, argon, nitrogen, vacuum vent, and DMS are identified in Figure 2.2-1. Further information on each of these interfaces is available in this section of this document.

All services will be provided to Furnace Module-1 by the Core Rack, except avionics air and fire detection and suppression, which will be provided at Experiment Rack-1 via the SSFF furnace interface panel. Other furnace-unique services which might be required will be the responsibility of the Furnace Developer and will be located in Experiment Rack-1.

#### 2.2.2.2 Furnace Module-1 Cooling Jacket-to-SSFF TCS

Furnace Module-1 will interface with the SSFF TCS via quick disconnects located at the Furnace Module-1 base ring.

TABLE 2.2-1. LIST OF EQUIPMENT PROPERTIES

| Equipment Nomenclature | Mass (kg) | Mass Maturity (%) | | | Mounting Preferred | Center of Gravity Station (cm) | | | Moment of Inertia (kg-m2) | | | Product of Inertial (kg-m2) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | est. | cal. | act. | | X | Y | Z | Ix | Iy | Iz | Ixy | Ixz | Iyz |
| Furnace Module-1 | 327.0 | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Utilities Interface Panel | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |
| Interface Cables and Fluid Lines | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD | TBD |

TABLE 2.2-2. FURNACE MODULE-1 STOWAGE LIST

| Item | Number Required | Mass Each (kg) | Dimensions (cm) LxWxH or LxDia | Stowage Responsiblity Ex | Stowage Responsiblity PL | Stowage Phase L | Stowage Phase O | Stowage Phase R | Special Requirements |
|---|---|---|---|---|---|---|---|---|---|
| Sample Ampoule/Cartridge Assembly with Stowage Bag (5 flight and 5 spares) | 10 | 1.60 | 73.7 x 13.2 dia. | | | √ | | √ | |
| Work Bag | TBD | 0.07 | 45.7 x 5.1 dia. | | | √ | | √ | |
| Glovebox Cover | 1 | TBD | TBD | | | √ | | √ | |
| Flexible Glovebox | 1 | TBD | TBD | | | √ | | √ | |
| Torque Wrench, 1/4 in. (30-200 in-lb) | 1 | 0.31 | 24.1 x 2.1 X 1.9 | | | √ | | √ | |
| Socket, 1/2 in. deep, (1/4-in. drive) | 1 | 0.09 | 5.1 x 1.7 dia. | | | √ | | √ | |
| Extender, 10 in. (1/4-in. drive) | 1 | 0.10 | 25.4 x 1.3 dia. | | | √ | | √ | |
| Hex Head Driver, 5/32 in. (3/8-in. drive) | 1 | 0.01 | 5.2 x 1.3 dia. | | | √ | | √ | |
| Hex Head Driver, 1/4 in. (3/8-in. drive) | 1 | 0.01 | 5.2 x 1.3 dia. | | | √ | | √ | |
| Adapter, 1/4 to 3/8 in. (1/4-in. drive) | 1 | 0.02 | 2.4 x 1.3 dia. | | | √ | | √ | |
| Viton Gloves (pair) | 1 | 0.41 | 14.0 x 22.9 x 3.8 | | | √ | | √ | |
| Filter Test Bags | 10 | 0.01 | 15.2 x 15.2 x 0.5 | | | √ | | √ | |
| SACA Wrench | 1 | 0.26 | 76.2 x 5.2 dia. | | | √ | | √ | |
| Torque Wrench (0-30 in-lb) | 1 | 0.40 | 17.8 x 3.2 dia. | | | √ | | √ | |
| Transfer Units | 10 | 0.26 | 20.6 x 9.1 dia. | | | √ | | √ | |

**TBD**

FIGURE 2.2-1. FURNACE MODULE-1 EAC CONNECTOR LOCATIONS

2.2.2.3 Furnace Module-1 Electrical Connection-to-SSFF PCDS

The furnace module will interface with the SSFF PCDS via the furnace junction box located within Experiment Rack-1 to the Furnace Module-1 base ring connection.

2.2.2.4 Furnace Module-1 to SSFF-Supplied Argon and Nitrogen

Furnace Module-1 will interface with the SSFF Core Rack-supplied argon and nitrogen through a connection at the Furnace Module-1 base ring.

2.2.2.5 Furnace Module-1 to SSFF-Supplied Vacuum Vent

Furhace Module-1 will interface with the SSF-supplied vacuum vent through a connection at the Furnace Module-1 base ring.

2.2.2.6 Furnace Module-1 DMS Connections-to-SSFF DMS

The furnace module will interface with the SSFF DMS via the Furnace Data Acquisition and Control System (FDACS) located within Experiment Rack-1.

2.2.2.7 Furnace Module-1 Software-to-SSFF Software

The Furnace Module-1 software will require an interface with the SSFF software to support operation of the furnace module. This interface will include (1) downloading software and data to the Furnace Module-1 software; (2) collecting and processing (if necessary) data received from the Furnace Module-1 software; (3) responding to requests for SSFF resources such as power, gas, cooling, etc.; (4) retrieving stored data to be output to Furnace Module-1 for analysis; (5) network management of the local area network (LAN) connected to the Furnace Module-1 processor; (6) fault, detection, isolation, and recovery (FDIR) services; and (6) operating system services. Furnace Module-1 will also require interface from the SSFF software to the furnace heating system, the furnace translation system (if present), the furnace cavity pressure system, and the furnace current pulsing system.

2.2.2.8 Furnace Module-1 to Crew Interface

There are two ways the crew may interface with Furnace Module 1. The first way is through the top end of the EAC where the crew interfaces with the integrated furnace enclosure apparatus (IFEA) via the sample insertion port during manual sample exchange.

The second way the crew may interface with Furnace Module-1 is through the crew interface to the SSFF DMS (display and keyboard). Through the display and keyboard, a crewmember can direct the furnace to perform any number of operations including changing temperature profiles or rotating and loading a different sample into the processing position.

## 2.3. POINTING/STABILIZATION AND ALIGNMENT

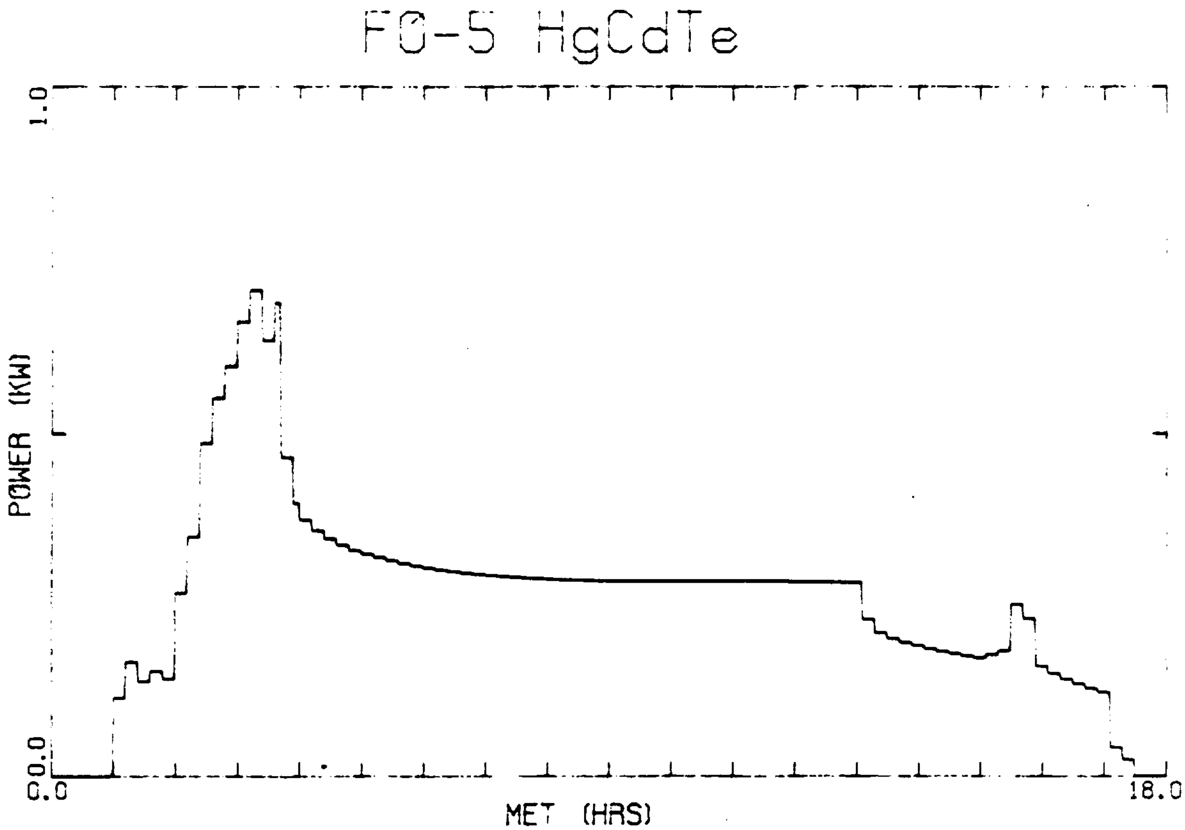
Furnace Module-1 requires specific alignment of the center line of the sample during processing. This requirement is that the residual dc acceleration vector (i.e., dc component of the acceleration vector at the sample due to all factors such as drag, orbital mechanics, etc.) should be aligned with the center line of the sample precisely enough that the component of the acceleration perpendicular to the center line is less than $10^{-7}$g. The direction of the vector may be required to be from hot zone to cold zone of the furnace or the opposite direction. The required direction will be determined separately for each sample.

## 2.4. ORBITAL REQUIREMENTS AND CONSTRAINTS

Furnace Module-1 requires specific Orbiter attitudes during processing in order to satisfy the requirement for orienting the reconfiguring furnace module (RFM) axis in relation to the residual dc acceleration vector. Details of the attitude requirements are to meet the requirements of Section 2.3.

## 2.5. ELECTRICAL REQUIREMENTS

All power conditioning will be accomplished by Space Station Furnace Facility (SSFF) prior to any distribution to Furnace Module-1. Furnace Module-1 heaters will interface with the Power Conditioning and Distribution System (PCDS) at the furnace junction boxes. The operational power profile defining the use of the SSFF-provided power to Furnace Module-1 during each functional objective (FO) is shown in Figure 2.5-1. The power profile data shown in these figures represent power requirement estimates to cover any of the the SSFF-accommodated furnace needs. Only FO-5 through FO-8 power profiles are shown since no power is associated with the furnace in FO-3, FO-4, FO-9, or FO-11. The power levels defined in Figure 2.5-1 are considered maximums. Time duration for peak power requirements is 72 h. The maximum peak power required is 1650 W. The average power required is 570 W.



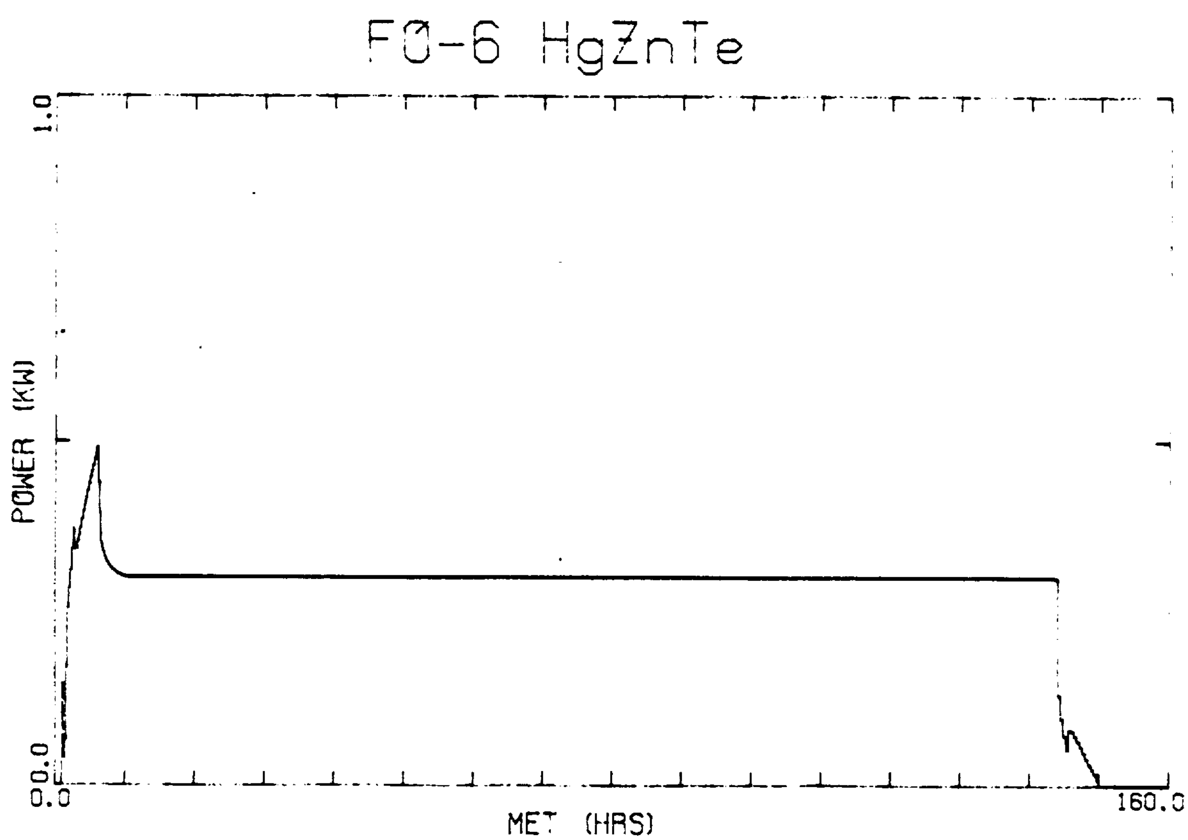
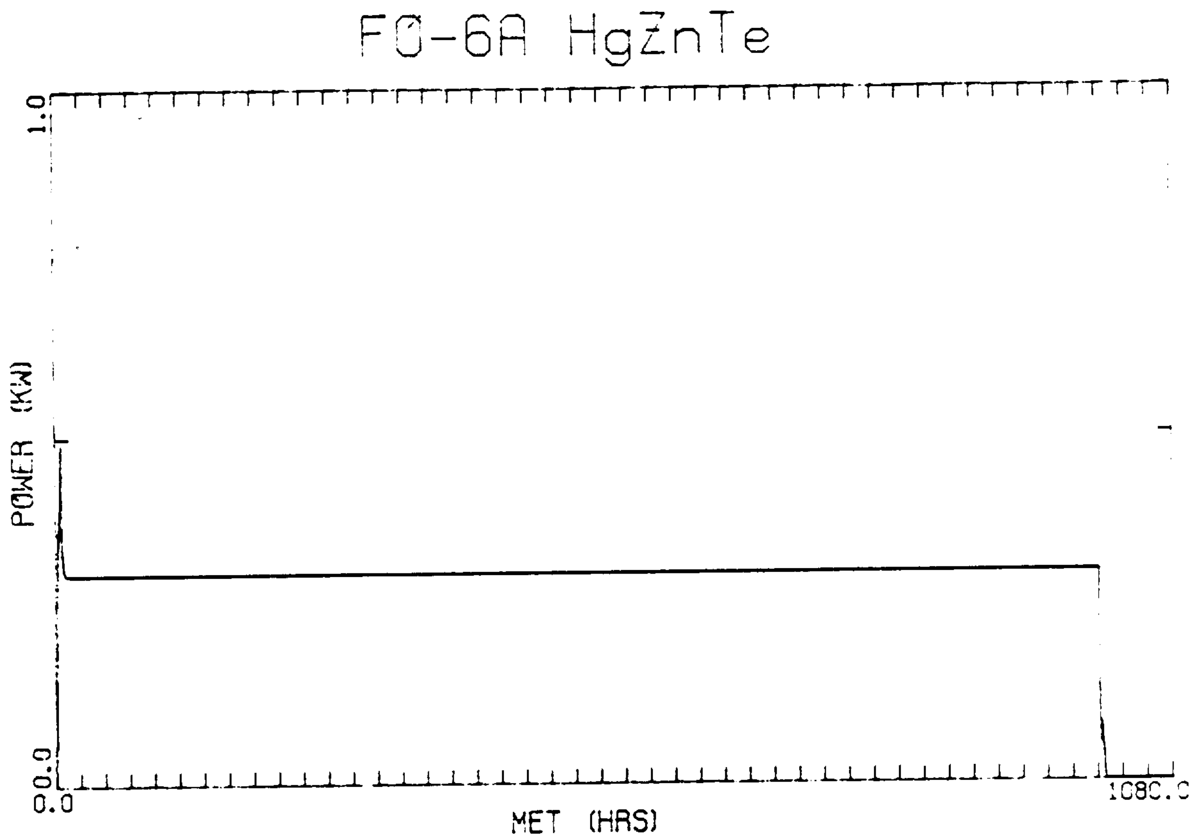




FIGURE 2.5-1. POWER PROFILES BY FO (Sheet 1 of 3)



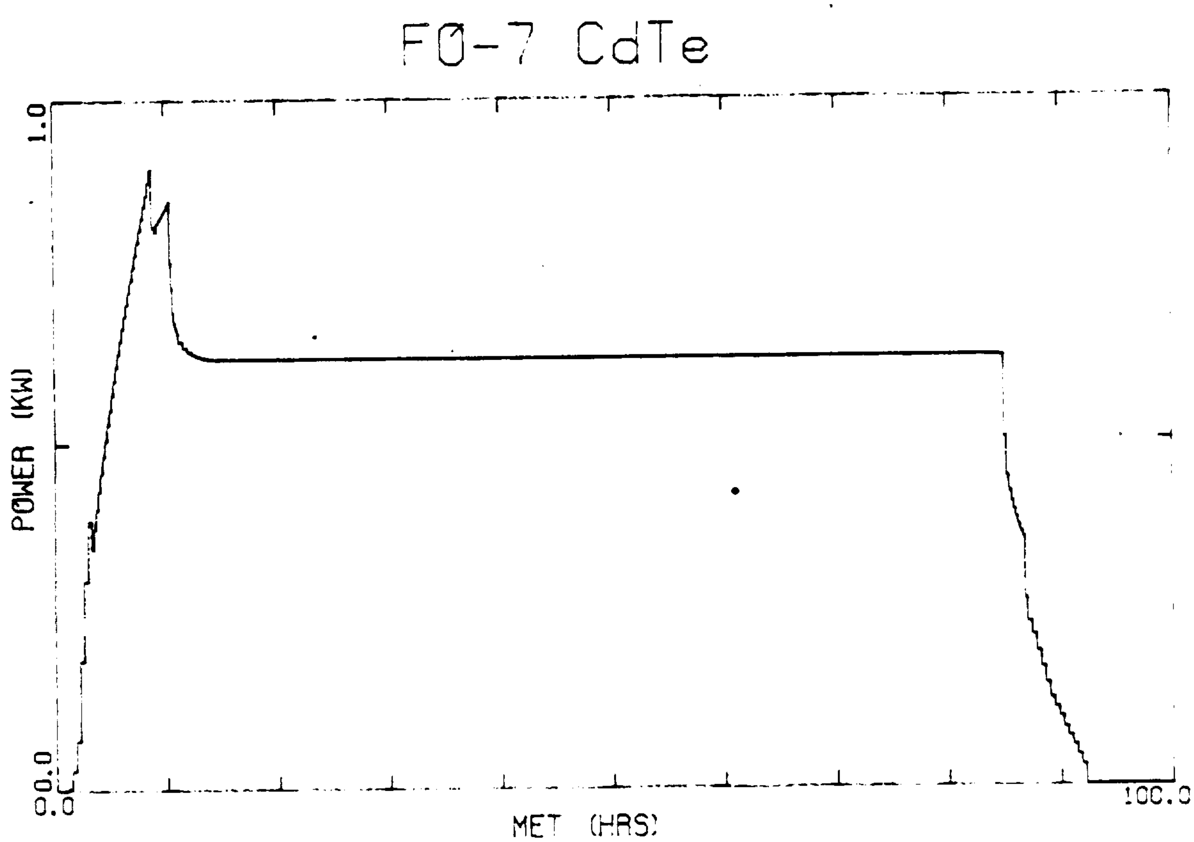




FIGURE 2.5-1. POWER PROFILES BY FO (Sheet 2 of 3)

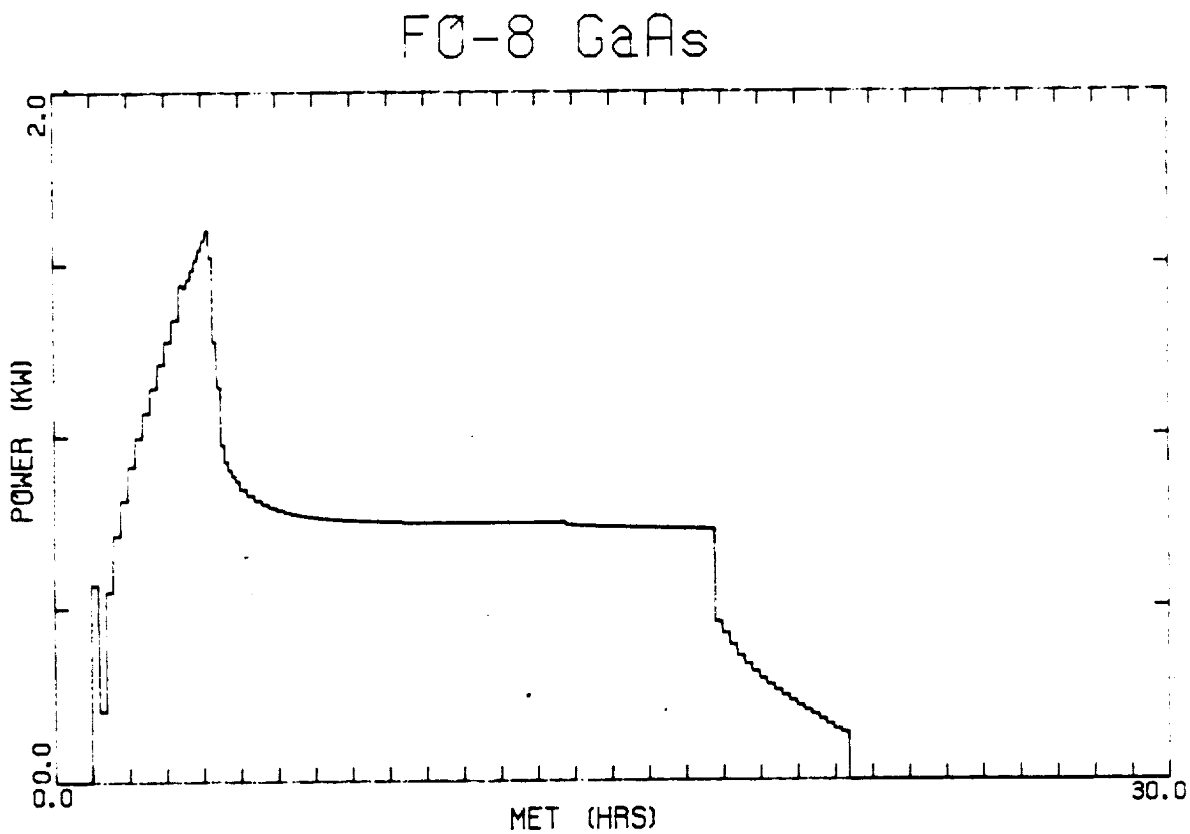



FIGURE 2.5-1. POWER PROFILES BY FO (Sheet 3 of 3)

## 2.6. THERMAL/FLUID REQUIREMENTS

### 2.6.1 HEAT TRANSFER CHARACTERISTICS

Furnace Module-1 utilizes the Space Station Furnace Facility (SSFF) water cooling loop for experiment cooling and will not require avionics air cooling. Thermal requirements for Furnace Module-1 are shown in Table 2.6-1. Maximum water-cooled heat dissipation from Experiment Rack-1 is 1500 W for Furnace Module-1. Required inlet temperature of the cooling water for Furnace Module-1 is 39.9 °C.

### 2.6.2 FLUID/VENT REQUIREMENTS

Furnace Module-1 requires an argon processing atmosphere. Argon required by Furnace Module-1 for the Integrated Configuration-1 (IC1) mission is 7.5 kg. The supplied argon is required to be research grade having the following contaminant levels:

| | |
|---|---|
| 99.9995 % pure | $N_2 < 3.0$ ppm |
| $CO_2 < 0.5$ ppm | $N_2O < 0.1$ ppm |
| $CO < 1.0$ ppm | $O_2 < 1.0$ ppm |
| $H_2 < 1.0$ ppm | THC < 0.5 ppm |
| $CH_4 < 0.5$ ppm | $H_2O < 0.5$ ppm |
| dewpoint = -112 °F | |

During nominal operating conditions, the vent products for Furnace Module-1 will be argon and nitrogen. Vent products during off-nominal conditions are TBD. Gas and vacuum requirements for Furnace Module-1 are shown in Table 2.6-2.

Furnace Module-1 has two paths to the SSF Vacuum System. The use of these paths is defined as follows:

- Path One - Active Pressure Control
  - Path one is used for Gas Distribution System (GDS)-controlled, or nominal venting.
  - Path one requires access to the Space Station Freedom (SSF) Vacuum System during the sample processing phases of Furnace Module-1 operations.
  - Venting episodes using path one will be SSF timelined activities. Typical vents will occur every 15 min to 1 h.

- Path Two - Emergency Pressure Relief
  - Path two provides for emergency relief of experiment apparatus container (EAC) overpressure through redundant pressure relief valves.
  - Path two must have access to the SSF Vacuum System during all on-orbit phases after installation into the U.S. Laboratory module.

TABLE 2.6-1. ON-ORBIT THERMAL REQUIREMENTS

| Equipment Item and FO No. | Heat Sink Type | | | | | Cooling Load (W) | | | Min/Max Temp (°C) | | | Thermal Capacitance (W-h-°C) | Special Considerations (as applicable) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Cabin | Rack Air (nonducted) | Rack Air (ducted) | Exp Coldplate (Module) | SSFF Core HX | Standby | Operate | Peak or other | Standby | Operate | Non-Operate | | |
| FO-3 | | | | | X | 0 | 0 | 0 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-4 | | | | | X | 0 | 0 | 0 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-5 | | | | | X | TBD | 232 | 270 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-6 | | | | | X | TBD | 274 | 285 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-6A | | | | | X | TBD | 283 | 285 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-7 | | | | | X | TBD | 525 | 580 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-8 | | | | | X | TBD | 524 | 697 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-9 | | | | | X | 0 | 0 | 0 | 0/50 | 0/50 | 0/50 | TBD | |
| FO-11 | | | | | X | 0 | 0 | 0 | 0/50 | 0/50 | 0/50 | TBD | |

TABLE 2.6-2. FLUID REQUIREMENTS

| Equipment Item and FO No. | Functional Requirement (Pressure, Purge, Vent Vacuum) | Gas or Liquid Parameters: Type | Quantity Stored (kg) | Pressure Limits (N/m2) | Flow-rate (kg/h) | Pressure Drop (N/m2) | Vent: Pressure (N/m2) | When Required and Duration | Vacuum Vent Rate: torr-l/sec | Special Considerations (as applicable) |
|---|---|---|---|---|---|---|---|---|---|---|
| FO-3 Step 2 | Vacuum Vent | Argon | 0 | $1.38 \times 10^5$ | >4.1 | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-4 Step 1 | Vacuum Vent | Nitrogen | 0 | $1.38 \times 10^5$ | TBD | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| Step 2 | Pressurize | Argon | 0 | $1.38 \times 10^5$ | >4.1 | TBD | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-5 | N/A | | | | | | | | | |
| FO-6 | N/A | | | | | | | | | |
| FO-6A | N/A | | | | | | | | | |
| FO-7 | N/A | | | | | | | | | |
| FO-8 | N/A | | | | | | | | | |
| FO-9 | Vent | | 0 | | | | 0.133 | TBD | $1.2 \times 10^{-3}$ | |
| FO-11 | N/A | | | | | | | | | |

# 2.7. DATA SYSTEM REQUIREMENTS

Furnace Module-1 will require the use of the Furnace Data Acquisition and Control System (FDACS) consisting of a Furnace Control Unit (FCU) and a Furnace Actuator Unit (FAU), which will monitor and collect data from Furnace Module-1 and provide control stimulus as needed for the positioning of samples. The requirements from the Furnace Module-1 to the SSFF Core are defined in subsections 2.7.1 through 2.7.5 and in Tables 2.7-1 through 2.7-5..

## 2.7.1 SIGNAL INTERFACE DEFINITION

Table 2.7-1 defines the following data signals and control to perform the following data handling and operations functions:

- Furnace Module-1 activation and control
- Acquisition, formatting, and routing of Furnace Module-1 housekeeping data
- Acquisition, formatting, and routing of Furnace Module-1 science data

## 2.7.2 SIGNAL INTERFACE DEFINITION EXPANSION

Table 2.7-2 is an expansion of the input and output data streams identified in Table 2.7-1.

## 2.7.3 EVENT/EXCEPTION MONITORING REQUIREMENTS

Onboard event and exception monitoring requirements for data transmitted to the SSFF are defined in Table 2.7-3.

## 2.7.4 PAYLOAD OPERATIONS INTEGRATION CENTER DISPLAY REQUIREMENTS

The Payload Operations Integration Center (POIC) controls all payload operations and is equipped with consoles for data management, operations control, and mission planning. The data to provide this capability are shown in Table 2.7-4.

## 2.7.5 POIC LIMIT SENSING/EXCEPTION MONITORING REQUIREMENTS

Limit sensing and exception monitoring are provided to the POIC via downlink and are defined in Table 2.7-5.

TABLE 2.7-1. SIGNAL INTERFACE DEFINITION

```
-----------------------------------------------------------------------------------------------
|   |                                  |C|S D|I N|SER.DATA |E|E|C|S R|///////////////RESERVED/////////////|
|   |                                  |M|I E|N O|---------|V|X|A|A A|-----------|---------|-------------|
|   |                                  |D|G F|T .|NM|NW|S|T|E|C|L|M T|  |   | |  |  | | |   | | |
|ENT|                                  | |N .|R  |OS|OO|O|Y|N|P|.|P E|  |   | |  |  | | |   | | |
|NO.|         DESCRIPTION              |U|A  |F  |.G|.R| |P|T|M|C|L  |  |   | |  |  | | |   | | |
|   |                                  |L|L  |A  |OS|OD|F|E| |O|O|E  |  |   | |  |  | | |   | | |
|   |                                  |K|   |C  |F |FS|X| | |N|F|   |  |   | |  |  | | |   | | |
-----------------------------------------------------------------------------------------------
|106|FURNACE MODULE HOUSEKEEPING DATA| |SI |  1| 3|32| |N| | | | 1|  |   | |  |  | | |   | | |
|107|SSFF HOUSEKEEPING DATA           | |SI |  1| 3|32| |N| | | | 1|  |   | |  |  | | |   | | |
|850|FURNACE SCIENCE DATA             | |SI |  1| 3|32| |N| | | | 1|  |   | |  |  | | |   | | |
|851|FURNACE SCIENCE DATA             | |SI |  1| 3|32| |N| | | | 1|  |   | |  |  | | |   | | |
-----------------------------------------------------------------------------------------------
          1         2         3          4          5        6       7        8
123 45678901234567890123456789012345 6 789 012 34 56 7 8 9 0 1 234 567 890 123 4 567 890 1 23 4567 89 0
```

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 1 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MNSOG. | NMOS/GWDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 106 | Go/NoGo Error Override | | DI | 01 | | | B | 00 | 00 | 00 | 00 | | | | | Y | | 3330 | 41 | 2 |
| 201 | 106 | Process Elapsed Time - Seconds | | DG | 01 | 06 | | U | 00 | 01 | 00 | 06 | | | | | Y | | 3331 | 41 | 2 |
| 202 | 106 | CGF Sytstem State | | DG | 01 | 03 | | U | 00 | 07 | 00 | 09 | | | | | Y | | 3332 | 41 | 2 |
| 203 | 106 | Sample Number (Mode) | | DG | 01 | 06 | | U | 00 | 10 | 00 | 15 | | | | | Y | | 3333 | 41 | 2 |
| 204 | 106 | Process Elapsed Time - Hours | | DG | 01 | 10 | | U | 01 | 00 | 01 | 09 | | | | | Y | | 3334 | 41 | 2 |
| 205 | 106 | Process Elapsed Time - Minutes | | DG | 01 | 06 | | U | 01 | 10 | 01 | 15 | | | | | Y | | 3335 | 41 | 2 |
| 207 | 106 | IFEA Water Outlet Temp | | AI | 01 | | | S | 03 | 00 | 03 | 07 | | | Y | Y | Y | | 3336 | 41 | 2 |
| 208 | 106 | IFEA Lower Humidity | | AI | 01 | | | S | 04 | 00 | 04 | 07 | | | Y | Y | Y | | 3337 | 41 | 2 |
| 209 | 106 | IFEA Upper Humidity | | AI | 01 | | | S | 05 | 00 | 05 | 07 | | | Y | Y | Y | | 3338 | 41 | 2 |
| 210 | 106 | IFEA Upper Atmosphere Temp | | AI | 01 | | | S | 12 | 00 | 12 | 07 | | | Y | Y | Y | | 3355 | 41 | 2 |
| 211 | 106 | RFM Cold End Shell Temp | | AI | 01 | | | S | 13 | 00 | 13 | 07 | | | Y | Y | Y | | 3356 | 41 | 2 |
| 212 | 106 | RFM Hot End Shell Temp | | AI | 01 | | | S | 14 | 00 | 14 | 07 | | | Y | Y | Y | | 3357 | 41 | 2 |
| 213 | 106 | Ampoule Alignment Arm Temp | | AI | 01 | | | S | 15 | 00 | 15 | 07 | | | | Y | Y | | 3358 | 41 | 2 |
| 214 | 106 | SEM Track Temp | | AI | 01 | | | S | 16 | 00 | 16 | 07 | | | | Y | Y | | 3359 | 41 | 2 |
| 215 | 106 | IFEA Absolute Pressure 1 | | AI | 01 | | | S | 17 | 00 | 17 | 07 | | | Y | Y | Y | | 3360 | 41 | 2 |
| 216 | 106 | IFEA Absolute Pressure 2 | | AI | 01 | | | S | 18 | 00 | 18 | 07 | | | Y | Y | Y | | 3361 | 41 | 2 |
| 217 | 106 | Furnace Linear Position | | AI | 01 | | | S | 19 | 00 | 19 | 07 | | | | Y | Y | | 3362 | 41 | 2 |
| 218 | 106 | Indexing CAM Rotary Position | | AI | 01 | | | S | 20 | 00 | 20 | 07 | | | | Y | Y | | 3363 | 41 | 2 |
| 219 | 106 | Experiment Main Bus Current | | AI | 01 | | | S | 21 | 00 | 21 | 07 | | | Y | Y | Y | | 3364 | 41 | 2 |
| 220 | 106 | Experiment Main Bus Voltage | | AI | 01 | | | S | 22 | 00 | 22 | 07 | | | Y | Y | Y | | 3365 | 41 | 2 |
| 221 | 106 | Water Outlet Vlv RCCB Off Status | | DI | 01 | | | B | 23 | 00 | 23 | 00 | | | | | Y | | 3250 | 41 | 2 |
| 222 | 106 | Water Outlet Vlv RCCB On Status | | DI | 01 | | | B | 23 | 01 | 23 | 01 | | | | | Y | | 3251 | 41 | 2 |
| 223 | 106 | IFEA Coolant Flow #1 Status | | DI | 01 | | | B | 23 | 02 | 23 | 02 | | | Y | | Y | | 3366 | 41 | 2 |
| 224 | 106 | IFEA Coolant Flow #2 Status | | DI | 01 | | | B | 23 | 03 | 23 | 03 | | | Y | | Y | | 3367 | 41 | 2 |
| 225 | 106 | Vacuum Vent Vlv RCCB Off Status | | DI | 01 | | | B | 23 | 04 | 23 | 04 | | | | | Y | | 3368 | 41 | 2 |
| 226 | 106 | Vacuum Vent Vlv RCCB On Status | | DI | 01 | | | B | 23 | 05 | 23 | 05 | | | | | Y | | 3369 | 41 | 2 |
| 227 | 106 | Hot Boost Mod A RCCB Off Status | | DI | 01 | | | B | 23 | 06 | 23 | 06 | | | | | Y | | 3370 | 41 | 2 |
| 228 | 106 | Hot Boost Mod A RCCB On Status | | DI | 01 | | | B | 23 | 07 | 23 | 07 | | | | | Y | | 3371 | 41 | 2 |
| 229 | 106 | Hot Boost Mod B RCCB Off Status | | DI | 01 | | | B | 23 | 08 | 23 | 08 | | | | | Y | | 3372 | 41 | 2 |
| 230 | 106 | Hot Boost Mod B RCCB On Status | | DI | 01 | | | B | 23 | 09 | 23 | 09 | | | | | Y | | 3373 | 41 | 2 |
| 003 | 006 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 2 of 38)

| ENT NO. | CORR NO. | DESCRIPTION | CMD/UIL | MSG UE | MN SO G. | NM OS /G | S O F W/D/S/I | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXC | CAL COEF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 231 | 106 | COLD Main Prim Mod RCCB Off Stat | DI | | 01 | | | B | 23 | 10 | 23 | 10 | | | | | Y | | 3374 | 41 | 2 |
| 232 | 106 | COLD Main Prim Mod RCCB On Stat | DI | | 01 | | | B | 23 | 11 | 23 | 11 | | | | | Y | | 3375 | 41 | 2 |
| 233 | 106 | HotMain Prim Mod A RCCB Off Stat | DI | | 01 | | | B | 23 | 12 | 23 | 12 | | | | | Y | | 3376 | 41 | 2 |
| 234 | 106 | HotMain Prim Mod A RCCB On Stat | DI | | 01 | | | B | 23 | 13 | 23 | 13 | | | | | Y | | 3377 | 41 | 2 |
| 235 | 106 | Water Inlet Valve RCCB Off Stat | DI | | 01 | | | B | 23 | 14 | 23 | 14 | | | | | Y | | 3378 | 41 | 2 |
| 236 | 106 | Water Inlet Valve RCCB On Status | DI | | 01 | | | B | 23 | 15 | 23 | 15 | | | | | Y | | 3379 | 41 | 2 |
| 237 | 106 | PDS Airflow 1 Status | DI | | 01 | | | B | 24 | 00 | 24 | 00 | | | Y | | Y | | 3380 | 41 | 2 |
| 238 | 106 | SCS Airflow 1 Status | DI | | 01 | | | B | 24 | 01 | 24 | 01 | | | Y | | Y | | 3381 | 41 | 2 |
| 239 | 1^6 | PCS Airflow 1 Status | DI | | 01 | | | B | 24 | 02 | 24 | 02 | | | Y | | Y | | 3382 | 41 | 2 |
| 240 | 1J6 | PCS Airflow 2 Status | DI | | 01 | | | B | 24 | 03 | 24 | 03 | | | Y | | Y | | 3383 | 41 | 2 |
| 241 | 106 | Argon Fill Valve RCCB Off Status | DI | | 01 | | | B | 24 | 04 | 24 | 04 | | | | | Y | | 3384 | 41 | 2 |
| 242 | 106 | Argon Fill Valve RCCB On Status | DI | | 01 | | | B | 24 | 05 | 24 | 05 | | | | | Y | | 3385 | 41 | 2 |
| 243 | 106 | PCS Utility RCCB Off Status | DI | | 01 | | | B | 24 | 06 | 24 | 06 | | | | | Y | | 3386 | 41 | 2 |
| 244 | 106 | PCS Utility RCCB On Status | DI | | 01 | | | B | 24 | 07 | 24 | 07 | | | | | Y | | 3387 | 41 | 2 |
| 245 | 106 | Peltier Conn Motor RCCB Off Stat | DI | | 01 | | | B | 24 | 08 | 24 | 08 | | | | | Y | | 3388 | 41 | 2 |
| 246 | 106 | Peltier Conn Motor RCCB On Stat | DI | | 01 | | | B | 24 | 09 | 24 | 09 | | | | | Y | | 3389 | 41 | 2 |
| 247 | 106 | Cold Main Red Mod RCCB Off Stat | DI | | 01 | | | B | 24 | 10 | 24 | 10 | | | | | Y | | 3390 | 41 | 2 |
| 248 | 106 | Cold Main Red Mod RCCB On Status | DI | | 01 | | | B | 24 | 11 | 24 | 11 | | | | | Y | | 3391 | 41 | 2 |
| 249 | 106 | Hot Main Prim Mod B RCCB Off Sta | DI | | 01 | | | B | 24 | 12 | 24 | 12 | | | | | Y | | 3392 | 41 | 2 |
| 250 | 106 | Hot Main Prim Mod B RCCB On Stat | DI | | 01 | | | B | 24 | 13 | 24 | 13 | | | | | Y | | 3393 | 41 | 2 |
| 251 | 106 | Hot Guard Module RCCB Off Status | DI | | 01 | | | B | 24 | 14 | 24 | 14 | | | | | Y | | 3394 | 41 | 2 |
| 252 | 106 | Hot Guard Module RCCB On Status | DI | | 01 | | | B | 24 | 15 | 24 | 15 | | | | | Y | | 3395 | 41 | 2 |
| 253 | 106 | Mech Pulsing Mod RCCB Off Status | DI | | 01 | | | B | 25 | 00 | 25 | 00 | | | | | Y | | 3252 | 41 | 2 |
| 254 | 106 | Mech Pulsing Mod RCCB On Status | DI | | 01 | | | B | 25 | 01 | 25 | 01 | | | | | Y | | 3253 | 41 | 2 |
| 255 | 106 | IFEA ABS Press 2 RCCB Off Status | DI | | 01 | | | B | 25 | 02 | 25 | 02 | | | | | Y | | 3396 | 41 | 2 |
| 256 | 106 | IFEA ABS Press 2 RCCB On Status | DI | | 01 | | | B | 25 | 03 | 25 | 03 | | | | | Y | | 3397 | 41 | 2 |
| 257 | 106 | IFEA ABS Press 1 RCCB Off Status | DI | | 01 | | | B | 25 | 04 | 25 | 04 | | | | | Y | | 3398 | 41 | 2 |
| 258 | 106 | IFEA ABS Press 1 RCCB On Status | DI | | 01 | | | B | 25 | 05 | 25 | 05 | | | | | Y | | 3399 | 41 | 2 |
| 259 | 106 | Vacuum Vent Valve Closed Status | DI | | 01 | | | B | 25 | 06 | 25 | 06 | | | | | Y | | 3400 | 41 | 2 |
| 260 | 106 | Vacuum Vent Valve Open Status | DI | | 01 | | | B | 25 | 07 | 25 | 07 | | | | | Y | | 3401 | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 3 of 38)

| IDENT NO. | CONR. | DESCRIPTION | CUM SIDA GUE LK | MN SO G. | NM SO /G WDS/ | S O F I X D | T Y P E | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL .COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 261 | 106 | Argon Fill Valve Closed Status | | DI | 01 | | B | 25 | 08 | 25 | 08 | | | | | Y | | 3402 | 41 | 2 |
| 262 | 106 | Argon Fill Valve Open Status | | DI | 01 | | B | 25 | 09 | 25 | 09 | | | | | Y | | 3403 | 41 | 2 |
| 263 | 106 | Hot Main Red Mod A RCCB Off Stat | | DI | 01 | | B | 25 | 10 | 25 | 10 | | | | | Y | | 3254 | 41 | 2 |
| 264 | 106 | Hot Main Red Mod A RCCB On Stat | | DI | 01 | | B | 25 | 11 | 25 | 11 | | | | | Y | | 3255 | 41 | 2 |
| 265 | 106 | Water Outlet Valve Normal Stat | | DI | 01 | | B | 25 | 12 | 25 | 12 | | | Y | | Y | | 3404 | 41 | 2 |
| 266 | 106 | Water Outlet Valve Bypass Stat | | DI | 01 | | B | 25 | 13 | 25 | 13 | | | Y | | Y | | 3405 | 41 | 2 |
| 267 | 106 | Water Inlet Valve Normal Status | | DI | 01 | | B | 25 | 14 | 25 | 14 | | | Y | | Y | | 3406 | 41 | 2 |
| 268 | 106 | Water Inlet Valve Bypass Status | | DI | 01 | | B | 25 | 15 | 25 | 15 | | | Y | | Y | | 3407 | 41 | 2 |
| 269 | 106 | Fail Safe Brake RCCB Off Status | | DI | 01 | | B | 26 | 00 | 26 | 00 | | | | | Y | | 3408 | 41 | 2 |
| 270 | 106 | Fail Safe Brake RCCB On Status | | DI | 01 | | B | 26 | 01 | 26 | 01 | | | | | Y | | 3409 | 41 | 2 |
| 271 | 106 | Core Hold Down Not Retracted | | DI | 01 | | B | 26 | 02 | 26 | 02 | | | | | Y | | 3410 | 41 | 2 |
| 272 | 106 | Core Hold Down Retracted | | DI | 01 | | B | 26 | 03 | 26 | 03 | | | | | Y | | 3411 | 41 | 2 |
| 273 | 106 | Core Hold Down Not Extended | | DI | 01 | | B | 26 | 04 | 26 | 04 | | | | | Y | | 3412 | 41 | 2 |
| 274 | 106 | Core Hold Down Extended | | DI | 01 | | B | 26 | 05 | 26 | 05 | | | | | Y | | 3413 | 41 | 2 |
| 275 | 106 | Core HD Motor RCCB Off Status | | DI | 01 | | B | 26 | 06 | 26 | 06 | | | | | Y | | 3414 | 41 | 2 |
| 276 | 106 | Core HD Motor RCCB On Status | | DI | 01 | | B | 26 | 07 | 26 | 07 | | | | | Y | | 3415 | 41 | 2 |
| 277 | 106 | Step Motor Clutch RCCB Off Stat | | DI | 01 | | B | 26 | 08 | 26 | 08 | | | | | Y | | 3416 | 41 | 2 |
| 278 | 106 | Step Motor Clutch RCCB On Status | | DI | 01 | | B | 26 | 09 | 26 | 09 | | | | | Y | | 3417 | 41 | 2 |
| 279 | 106 | Step Motor Drive RCCB Off Stat | | DI | 01 | | B | 26 | 10 | 26 | 10 | | | | | Y | | 3418 | 41 | 2 |
| 280 | 106 | Step Motor Drive RCCB On Stat | | DI | 01 | | B | 26 | 11 | 26 | 11 | | | | | Y | | 3419 | 41 | 2 |
| 281 | 106 | Rapid Xlation Clutch RCCB Off St | | DI | 01 | | B | 26 | 12 | 26 | 12 | | | | | Y | | 3420 | 41 | 2 |
| 282 | 106 | Rapid Xlation Clutch RCCB On St | | DI | 01 | | B | 26 | 13 | 26 | 13 | | | | | Y | | 3421 | 41 | 2 |
| 283 | 106 | Rapid Xlation Mtr RCCB Off Stat | | DI | 01 | | B | 26 | 14 | 26 | 14 | | | | | Y | | 3422 | 41 | 2 |
| 284 | 106 | Rapid Xlation Mtr RCCB On Status | | DI | 01 | | B | 26 | 15 | 26 | 15 | | | | | Y | | 3423 | 41 | 2 |
| 285 | 106 | Furnace Position Not Home | | DI | 01 | | B | 27 | 00 | 27 | 00 | | | | | Y | | 3424 | 41 | 2 |
| 286 | 106 | Furnace Position Home | | DI | 01 | | B | 27 | 01 | 27 | 01 | | | | | Y | | 3425 | 41 | 2 |
| 287 | 106 | Furn Extreme Trvl Not Exceeded | | DI | 01 | | B | 27 | 02 | 27 | 02 | | | Y | | Y | | 3426 | 41 | 2 |
| 288 | 106 | Furn Extreme Trvl Exceeded | | DI | 01 | | B | 27 | 03 | 27 | 03 | | | Y | | Y | | 3427 | 41 | 2 |
| 289 | 106 | Ampoule Alignment Not Retracted | | DI | 01 | | B | 27 | 04 | 27 | 04 | | | | | Y | | 3428 | 41 | 2 |
| 290 | 106 | Ampoule Alignment Retracted | | DI | 01 | | B | 27 | 05 | 27 | 05 | | | | | Y | | 3429 | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 4 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | SOFIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | DATA VALUE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 291 | 106 | | Ampoule Alignment Not Extended | | DI | 01 | | | B | 27 | 06 | 27 | 06 | | | | | | Y | | 3430 | 41 | 2 |
| 292 | 106 | | Ampoule Alignment Extended | | DI | 01 | | | B | 27 | 07 | 27 | 07 | | | | | | Y | | 3431 | 41 | 2 |
| 293 | 106 | | Ampoule Align Mtr RCCB Off Stat | | DI | 01 | | | B | 27 | 08 | 27 | 08 | | | | | | Y | | 3432 | 41 | 2 |
| 294 | 106 | | Ampoule Align Mtr RCCB On Stat | | DI | 01 | | | B | 27 | 09 | 27 | 09 | | | | | | Y | | 3433 | 41 | 2 |
| 295 | 106 | | Ampoule Support Not Retracted | | DI | 01 | | | B | 27 | 10 | 27 | 10 | | | | | | Y | | 3434 | 41 | 2 |
| 296 | 106 | | Ampoule Support Retracted | | DI | 01 | | | B | 27 | 11 | 27 | 11 | | | | | | Y | | 3435 | 41 | 2 |
| 297 | 106 | | Ampoule Support Not Secure | | DI | 01 | | | B | 27 | 12 | 27 | 12 | | | | | | Y | | 3436 | 41 | 2 |
| 298 | 106 | | Ampoule Support Secure | | DI | 01 | | | B | 27 | 13 | 27 | 13 | | | | | | Y | | 3437 | 41 | 2 |
| 299 | 106 | | Ampoule Spt Plt Mtr RCCB Off St | | DI | 01 | | | B | 27 | 14 | 27 | 14 | | | | | | Y | | 3438 | 41 | 2 |
| 300 | 106 | | Ampoule Spt Plt Mtr RCCB On Stat | | DI | 01 | | | B | 27 | 15 | 27 | 15 | | | | | | Y | | 3439 | 41 | 2 |
| 301 | 106 | | Cold Guard Mod RCCB Off Status | | DI | 01 | | | B | 28 | 00 | 28 | 00 | | | | | | Y | | 3256 | 41 | 2 |
| 302 | 106 | | Cold Guard Mod RCCB On Status | | DI | 01 | | | B | 28 | 01 | 28 | 01 | | | | | | Y | | 3257 | 41 | 2 |
| 303 | 106 | | Carousel Spacer Plt Gap Lim-Not | | DI | 01 | | | B | 28 | 02 | 28 | 02 | | | | | | Y | | 3440 | 41 | 2 |
| 304 | 106 | | Carousel Spacer Plt Gap Limit | | DI | 01 | | | B | 28 | 03 | 28 | 03 | | | | | | Y | | 3441 | 41 | 2 |
| 305 | 106 | | Indexing Cam Not Stowed | | DI | 01 | | | B | 28 | 04 | 28 | 04 | | | | | | Y | | 3442 | 41 | 2 |
| 306 | 106 | | Indexing Cam Stowed | | DI | 01 | | | B | 28 | 05 | 28 | 05 | | | | | | Y | | 3443 | 41 | 2 |
| 307 | 106 | | Carousel Trk Extr Left Lim-Not | | DI | 01 | | | B | 28 | 06 | 28 | 06 | | | | | | Y | | 3444 | 41 | 2 |
| 308 | 106 | | Carousel Trk Extr Left Limit | | DI | 01 | | | B | 28 | 07 | 28 | 07 | | | | | | Y | | 3445 | 41 | 2 |
| 309 | 106 | | Carousel Trk Extr Right Lim-Not | | DI | 01 | | | B | 28 | 08 | 28 | 08 | | | | | | Y | | 3446 | 41 | 2 |
| 310 | 106 | | Carousel Trk Extr Right Lim | | DI | 01 | | | B | 28 | 09 | 28 | 09 | | | | | | Y | | 3447 | 41 | 2 |
| 311 | 106 | | Hot Main Red Mod B RCCB Off Stat | | DI | 01 | | | B | 28 | 10 | 28 | 10 | | | | | | Y | | 3258 | 41 | 2 |
| 312 | 106 | | Hot Main Red Mod B RCCB On Stat | | DI | 01 | | | B | 28 | 11 | 28 | 11 | | | | | | Y | | 3259 | 41 | 2 |
| 313 | 106 | | SEM Index Motor RCCB Off Status | | DI | 01 | | | B | 28 | 12 | 28 | 12 | | | | | | Y | | 3448 | 41 | 2 |
| 314 | 106 | | SEM Index Motor RCCB On Status | | DI | 01 | | | B | 28 | 13 | 28 | 13 | | | | | | Y | | 3449 | 41 | 2 |
| 315 | 106 | | SEM Indexing Jog CCW Status | | DI | 01 | | | B | 28 | 14 | 28 | 14 | | | | | | Y | | 3450 | 41 | 2 |
| 316 | 106 | | SEM Indexing Jog CW Status | | DI | 01 | | | B | 28 | 15 | 28 | 15 | | | | | | Y | | 3451 | 41 | 2 |
| 317 | 106 | | Ampoule Not Processing | | DI | 01 | | | B | 29 | 00 | 29 | 00 | | | | | | Y | | 3452 | 41 | 2 |
| 318 | 106 | | Ampoule Processing | | DI | 01 | | | B | 29 | 01 | 29 | 01 | | | | | | Y | | 3453 | 41 | 2 |
| 319 | 106 | | System Bus Relay Off Status | | DI | 01 | | | B | 29 | 02 | 29 | 02 | | | | Y | | Y | | 3454 | 41 | 2 |
| 320 | 106 | | System Bus Relay On Status | | DI | 01 | | | B | 29 | 03 | 29 | 03 | | | | Y | | Y | | 3455 | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

## TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 5 of 38)

| ENT NO. | COR. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G WDS/ | SO P FIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 321 | 106 | | Peltier Pulsing Drv RCCB Off St | | DI | 01 | | | B | 29 | 04 | 29 | 04 | | | | | Y | | 3260 | 41 | 2 |
| 322 | 106 | | Peltier Pulsing Drv RCCB On Stat | | DI | 01 | | | B | 29 | 05 | 29 | 05 | | | | | Y | | 3261 | 41 | 2 |
| 001 | 850 | | Sync | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 002 | 850 | | Frame Count (SFID) | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 850 | | Spacelab Experiment ID | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 004 | 850 | | Sample Number (Mode) | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 005 | 850 | | Mission ID | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 006 | 850 | | Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 007 | 850 | | Furnace Position Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 008 | 850 | | Furn Extreme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 009 | 850 | | Furn Extreme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 010 | 850 | | Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 011 | 850 | | Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 012 | 850 | | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 013 | 850 | | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 014 | 850 | | Water Outlet Valve Normal Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 015 | 850 | | Water Outlet Valve Bypass Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 016 | 850 | | Water Inlet Valve Normal Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 017 | 850 | | Water Inlet Valve Bypass Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 018 | 850 | | Vacuum Vent Valve Open Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 019 | 850 | | Vacuum Vent Valve Closed Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 020 | 850 | | Argon Fill Valve Open Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 021 | 850 | | Argon Fill Valve Closed Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 022 | 850 | | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 023 | 850 | | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 024 | 850 | | Ampoule Alignment Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 025 | 850 | | Ampoule Alignment Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 026 | 850 | | Ampoule Alignment Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 027 | 850 | | Ampoule Alignment Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 028 | 850 | | SEM Indexing Jog CCW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 6 of 38)

| ENT NO. | C O R ;^ .. | N O . | DESCRIPTION | C M D U L K | U S A G E | MN SO G. | NM OS /G W D S / | S O P F I X D | T Y P E | DATA DESCRIPTION START WD # | START BT # | END WD # | END BT # | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | C A L . C O F | ////// C D T ? | RC IO D E | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 850 | | SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 030 | 850 | | Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 031 | 850 | | Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 032 | 850 | | Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 033 | 850 | | Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 034 | 850 | | Peltier Connector Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 035 | 850 | | Peltier Connector Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 036 | 850 | | Peltier Connector Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 037 | 850 | | Peltier Connector Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 038 | 850 | | Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 039 | 850 | | Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 040 | 850 | | Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 041 | 850 | | Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 042 | 850 | | Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 043 | 850 | | Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 044 | 850 | | Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 045 | 850 | | Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 046 | 850 | | PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 047 | 850 | | PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 048 | 850 | | IFEA ABS Press 2 RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 049 | 850 | | IFEA ABS Press 2 RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 050 | 850 | | Spare RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 051 | 850 | | Spare RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 052 | 850 | | IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 053 | 850 | | SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 054 | 850 | | Cartridge 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 055 | 850 | | Cartridge 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 056 | 850 | | Cartridge 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 057 | 850 | | Cartridge 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 058 | 850 | | Ampoule 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 7 of 38)

| ENT NO. | C O R R . | N O . | DESCRIPTION | C M D L U K | U S A G E | MN SO G. | NM OS /G W D S / | S O F I X D | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE T Y P E | MON REQ E V N T | MON REQ E X C P | C A L . C O F | C D T ? | RC IO D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 059 | 850 | | Ampoule 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 060 | 850 | | Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 061 | 850 | | Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 062 | 850 | | Water Outlet Vlv RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 063 | 850 | | Water Outlet Vlv RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 064 | 850 | | Vacuum Vent Vlv RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 065 | 850 | | Vacuum Vent Vlv RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 066 | 850 | | SEM Index Motor RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 067 | 850 | | SEM Index Motor RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 068 | 850 | | Core HD Motor RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 069 | 850 | | Core HD Motor RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 070 | 850 | | Hot Boost Mod A RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 071 | 850 | | Hot Boost Mod A RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 072 | 850 | | Hot Boost Mod B RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 073 | 850 | | Hot Boost Mod B RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 074 | 850 | | Cold Main Prim Mod RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 075 | 850 | | Cold Main Prim Mod RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 076 | 850 | | HotMain Prim Mod A RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 077 | 850 | | HotMain Prim Mod A RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 078 | 850 | | Carousel Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 079 | 850 | | Carousel Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 080 | 850 | | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 081 | 850 | | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 082 | 850 | | Carousel Trk Extr Left Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 083 | 850 | | Carousel Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 084 | 850 | | Carousel Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 085 | 850 | | Carousel Spacer Plt Gap Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 086 | 850 | | Ampoule Spt Plt Mtr RCCB Off St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 087 | 850 | | Ampoule Spt Plt Mtr RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 088 | 850 | | Ampoule Align Mtr RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | | |
| 003 | 006 | 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 8 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MNSO G. | MNOS /G WDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 089 | 850 | Ampoule Align Mtr RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 090 | 850 | Water Inlet Valve RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 091 | 850 | Water Inlet Valve RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 092 | 850 | Argon Fill Valve RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 093 | 850 | Argon Fill Valve RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 094 | 850 | System Bus Relay Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 095 | 850 | System Bus Relay On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 096 | 850 | IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 097 | 850 | PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 098 | 850 | Cartridge 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 099 | 850 | Cartridge 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 100 | 850 | Cartridge 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 101 | 850 | Cartridge 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 102 | 850 | Cartridge 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 103 | 850 | Cartridge 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 104 | 850 | Cartridge 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 105 | 850 | Cartridge 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 106 | 850 | PCS Utility RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 107 | 850 | PCS Utility RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 108 | 850 | Step Motor Drive RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 109 | 850 | Step Motor Drive RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 110 | 850 | IFEA ABS Press 1 RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 111 | 850 | IFEA ABS Press 1 RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 112 | 850 | Peltier Conn Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 113 | 850 | Peltier Conn Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 114 | 850 | Step Motor Clutch RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 115 | 850 | Step Motor Clutch RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 116 | 850 | Rapid Xlation Clutch RCCB Off St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 117 | 850 | Rapid Xlation Clutch RCCB On St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 118 | 850 | Rapid Xlation Mtr RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 9 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMDL | USAGE | MN SOG. | NM OS/G/W/D/S/ | SO FIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXC P | CAL CO F | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 850 | Rapid Xlation Mtr RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 120 | 850 | Fail Safe Brake RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 121 | 850 | Fail Safe Brake RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 122 | 850 | Cold Main Red Mod RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 123 | 850 | Cold Main Red Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 124 | 850 | Hot Main Prim Mod B RCCB Off Sta | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 125 | 850 | Hot Main Prim Mod B RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 126 | 850 | Hot Guard Module RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 127 | 850 | Hot Guard Module RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 128 | 850 | Mech Pulsing Mod RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 129 | 850 | Mech Pulsing Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 130 | 850 | Hot Main Red Mod A RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 131 | 850 | Hot Main Red Mod A RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 132 | 850 | Cold Guard Mod RCCB Off Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 133 | 850 | Cold Guard Mod RCCB On Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 134 | 850 | Hot Main Red Mod B RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 135 | 850 | Hot Main Red Mod B RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 136 | 850 | Peltier Pulsing Drv RCCB Off St | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 137 | 850 | Peltier Pulsing Drv RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 138 | 850 | Sample to Process #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 139 | 850 | Sample to Process #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 140 | 850 | Sample to Process #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 141 | 850 | Sample to Process #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 142 | 850 | Sample to Process #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 143 | S850 | ample to Process #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 144 | 850 | Processed Sample #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 145 | 850 | Processed Sample #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 146 | 850 | Processed Sample #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 147 | 850 | Processed Sample #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 148 | 850 | Processed Sample #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 006 | 007 | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 10 of 38)

| ENT NO. | C O R R . N O . | DESCRIPTION | C M D U L K | U S A G E | MN SO G. | NM OS /G W D S / | S O I F I X D | T Y P E | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE T Y P E | MON REQ E V N T | MON REQ E X C P | C A L . C O F | C D T ? | R C I O D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 149 | 850 | Processed Sample #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 150 | 850 | Last Sample Index | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 151 | 850 | GMT Day | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 152 | 850 | GMT Milliseconds of Day | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 153 | 850 | GMT Fractional Milliseconds | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 154 | 850 | Last Command Received Word #0 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 155 | 850 | Last Command Received Word #1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 156 | 850 | Last Command Received Word #2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 157 | 850 | Last Command Received Word #3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 158 | 850 | Last Command Received Word #4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 159 | 850 | Last Command Received Word #5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 160 | 850 | Last Command Received Word #6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 161 | 850 | Last Command Received Word #7 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 162 | 850 | Last Command Received Word #8 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 163 | 850 | Last Command Received Word #9 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 164 | 850 | Last Command Received Word #10 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 165 | 850 | Last Command Received Word #11 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 166 | 850 | Last Command Received Word #12 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 167 | 850 | Last Command Received Word #13 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 168 | 850 | Last Command Received Word #14 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 169 | 850 | Last Command Received Word #15 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 170 | 850 | Last Command Received Word #16 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 171 | 850 | Last Command Received Word #17 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 172 | 850 | Last Command Received Word #18 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 173 | 850 | Last Command Received Word #19 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 174 | 850 | Last Command Received Word #20 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 175 | 850 | Last Command Received Word #21 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 176 | 850 | Last Command Received Word #22 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 177 | 850 | Last Command Received Word #23 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 178 | 850 | Last Command Received Word #24 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 11 of 38)

| ENT NO. | CON R. R. | DESCRIPTION | CMDULK | USAGE | MN SO G. | NM OS /G WDS/ | SO P FIXD | TY PE | START WD # | START BT | END WD # | END BT | DATA TYPE | DATA VALUE | MON REQ EVNT | EXCP | CAL COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 179 | 3'0 | Last Command Received Word #25 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 180 | 850 | Last Command Received Word #26 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 181 | 850 | Last Command Received Word #27 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 182 | 850 | Last Command Received Word #28 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 183 | 850 | Last Command Received Word #29 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 184 | 850 | Last Command Received Word #30 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 185 | 850 | Last Command Received Word #31 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 186 | 850 | Invalid Command Flag | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 187 | 850 | User Requested Data | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 188 | 850 | ECS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 189 | 850 | FTS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 190 | 850 | FHS Cold Guard Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 191 | 850 | FHS Cold Zone Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 192 | 850 | FHS Booster Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 193 | 850 | FHS Hot Zone Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 194 | 850 | FHS Hot Guard Next Timeline Rec | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 195 | 850 | SIDS Next Timeline Record | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 196 | 850 | ECS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 197 | 850 | ECS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 198 | 850 | FTS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 199 | 850 | FTS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 200 | 850 | FHS Cold Guard Cur Seg Start Tim | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 201 | 850 | FHS Cold Guard Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 202 | 850 | FHS Cold Zone Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 203 | 850 | FHS Cold Zone Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 204 | 850 | FHS Booster Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 205 | 850 | FHS Booster Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 206 | 850 | FHS Hot Zone Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 207 | 850 | FHS Hot Zone Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 208 | 850 | FHS Hot Guard Cur Seg Start Time | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 12 of 38)

| IDENT NO. | CONR. | DESCRIPTION | CMD LK | USAGE | MN SO G. | NM OS I/G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL COF | CRC DT? | RC IOD DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | 850 | FHS Hot Guard Cur Seg Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 210 | 850 | SIDS Current Segment Start Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 211 | 850 | SIDS Current Segment Stop Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 212 | 850 | Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 213 | 850 | Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 214 | 850 | IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 215 | 850 | IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 216 | 850 | IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 217 | 850 | IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 218 | 850 | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 219 | 850 | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 220 | 850 | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 221 | 850 | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 222 | 850 | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 223 | 850 | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 224 | 850 | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 225 | 850 | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 226 | 850 | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 227 | 850 | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 228 | 850 | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 229 | 850 | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 230 | 850 | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 231 | 850 | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 232 | 850 | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 233 | 850 | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 234 | 850 | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 235 | 850 | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 236 | 850 | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 237 | 850 | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 238 | 850 | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 13 of 38)

| ENT NO. | COR NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 239 | 850 | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 240 | 850 | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 241 | 850 | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 242 | 850 | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 243 | 850 | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 244 | 850 | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 245 | 850 | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 246 | 850 | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 247 | 850 | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 248 | 850 | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 249 | 850 | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 250 | 850 | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 251 | 850 | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 252 | 850 | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 253 | 850 | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 254 | 850 | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 255 | 850 | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 256 | 850 | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 257 | 850 | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 258 | 850 | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 259 | 850 | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 260 | 850 | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 261 | 850 | Stepping Motor Phase A Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 262 | 850 | Stepping Motor Phase A Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 263 | 850 | Stepping Motor Phase B Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 264 | 850 | Stepping Motor Phase B Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 265 | 850 | Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 266 | 850 | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 267 | 850 | Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 268 | 850 | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | | |
| 003 | 006 / 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 14 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMDULK | USAGE | MNSOG. | NMOS/GWDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA TYPE | DATA VALUE | MON EVNT | REQ EXCP | CAL. COF | CDT? | RCIODE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 269 | 850 | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 270 | 850 | Cold Main Primary Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 271 | 850 | Cold Main Primary Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 272 | 850 | Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 273 | 850 | Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 274 | 850 | Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 275 | 850 | Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 276 | 850 | Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 277 | 850 | Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 278 | 850 | Hot Main Primary Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 279 | 850 | Hot Main Primary Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 280 | 850 | Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 281 | 850 | Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 282 | 850 | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 283 | 850 | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 284 | 850 | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 285 | 850 | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 286 | 850 | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 287 | 850 | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 288 | 850 | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 289 | 850 | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 290 | 850 | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 291 | 850 | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 292 | 850 | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 293 | 850 | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 294 | 850 | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 295 | 850 | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 296 | 850 | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 297 | 850 | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 298 | 850 | Booster Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03 06 07 | 39 40 | 43 45 47 48 | 51 53 55 57 | 65 66 67 | 71 72 | 75 78 | 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 15 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD | USAGE | MNSOG. | NMOS/GWDS/ | SOFIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 299 | 850 | | Booster Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 300 | 850 | | Cold Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 301 | 850 | | Cold Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 302 | 850 | | Cold Main Prim Htr Cntrl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 303 | 850 | | Cold Main Prim Htr Cntrl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 304 | 850 | | Cold Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 305 | 850 | | Cold Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 306 | 850 | | Hot Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 307 | 850 | | Hot Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 308 | 850 | | Hot Main Prim Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 309 | 850 | | Hot Main Prim Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 310 | 850 | | Hot Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 311 | 850 | | Hot Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 312 | 850 | | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 313 | 850 | | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 314 | 850 | | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 315 | 850 | | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 316 | 850 | | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 317 | 850 | | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 318 | 850 | | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 319 | 850 | | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 320 | 850 | | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 321 | 850 | | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 322 | 850 | | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 323 | 850 | | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 324 | 850 | | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 325 | 850 | | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 326 | 850 | | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 327 | 850 | | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 328 | 850 | | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 1.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 15 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD BULK | USAGE | MNSOG. | NMOS/G/WDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COEF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 299 | 850 | Booster Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 300 | 850 | Cold Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 301 | 850 | Cold Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 302 | 850 | Cold Main Prim Htr Cntrl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 303 | 850 | Cold Main Prim Htr Cntrl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 304 | 850 | Cold Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 305 | 850 | Cold Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 306 | 850 | Hot Guard Heater Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 307 | 850 | Hot Guard Heater Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 308 | 850 | Hot Main Prim Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 309 | 850 | Hot Main Prim Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 310 | 850 | Hot Main Red Htr Control Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 311 | 850 | Hot Main Red Htr Control Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 312 | 850 | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 313 | 850 | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 314 | 850 | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 315 | 850 | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 316 | 850 | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 317 | 850 | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 318 | 850 | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 319 | 850 | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 320 | 850 | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 321 | 850 | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 322 | 850 | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 323 | 850 | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 324 | 850 | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 325 | 850 | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 326 | 850 | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 327 | 850 | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 328 | 850 | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 17 of 38)

| ENT NO. | C O P. R. / N O | DESCRIPTION | C M D U L K | U S A G E | MN SO G. | NM OS /G W D S / | S O F I X D | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ E V N T | MON REQ E X C P | C A L C O F | C D T ? | RC IO D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 359 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 360 | 850 | Cold Guard Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 361 | 850 | Cold Main Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 362 | 850 | Booster Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 363 | 850 | Hot Main Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 364 | 850 | Hot Guard Zone Setpoint Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 365 | 850 | Cold Guard Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 366 | 850 | Cold Guard Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 367 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 368 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 369 | 850 | Cold Main Prim Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 370 | 850 | Cold Main Prim Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 371 | 850 | Cold Main Red Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 372 | 850 | Cold Main Red Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 373 | 850 | Booster Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 374 | 850 | Booster Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 375 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 376 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 377 | 850 | Hot Main Prim Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 378 | 850 | Hot Main Prim Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 379 | 850 | Hot Main Red Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 380 | 850 | Hot Main Red Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 381 | 850 | Hot Guard Htr Calc Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 382 | 850 | Hot Guard Htr Calc Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 383 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 384 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 385 | 850 | Cold Guard Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 386 | 850 | Cold Main Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 387 | 850 | Booster Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 388 | 850 | Hot Main Zone Act Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 006 007 | | 039 | 040 | 043 | 045 | 047 | 048 | 051 | 053 | 055 | 057 | | 065 | 066 | 067 | 071 | 072 | 075 | 078 | 080 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 18 of 38)

| ENT NO. | CORR. NO. | DESCRIPTION | CMD ULK | USAGE | MNSOG. | NMOS/G WDS/ | SO FIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | CIRC IODE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 389 | 850 | Hot Guard Zone Act Temp. | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 390 | 850 | Cold Guard Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 391 | 850 | Cold Main Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 392 | 850 | Booster Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 393 | 850 | Hot Main Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 394 | 850 | Hot Guard Zone Delta Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 395 | 850 | Cold Guard Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 396 | 850 | Cold Main Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 397 | 850 | Booster Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 398 | 850 | Hot Main Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 399 | 850 | Hot Guard Zone Uncpld Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 400 | 850 | Cold Guard Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 401 | 850 | Cold Main Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 402 | 850 | Booster Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 403 | 850 | Hot Main Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 404 | 850 | Hot Guard Zone Prop Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 405 | 850 | Cold Guard Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 406 | 850 | Cold Main Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 407 | 850 | Booster Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 408 | 850 | Hot Main Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 409 | 850 | Hot Guard Zone Int Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 410 | 850 | Cold Guard Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 411 | 850 | Cold Main Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 412 | 850 | Booster Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 413 | 850 | Hot Main Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 414 | 850 | Hot Guard Zone Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 415 | 850 | Cold Guard Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 416 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 417 | 850 | Cold Main Prim Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 418 | 850 | Cold Main Red Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 19 of 38)

| ENT NO. | CONO. R R . | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS /G W D S / | S O FIXD | TYPE | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCEPT | CAL. COEF | CIRC DT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 419 | 850 | Booster Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 420 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 421 | 850 | Hot Main Prim Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 422 | 850 | Hot Main Red Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 423 | 850 | Hot Guard Htr Calc Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 424 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 425 | 850 | Cold Guard Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 426 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 427 | 850 | Cold Main Prim Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 428 | 850 | Cold Main Red Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 429 | 850 | Booster Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 430 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 431 | 850 | Hot Main Prim Htr. Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 432 | 850 | Hot Main Red Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 433 | 850 | Hot Guard Htr Act Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 434 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 435 | 850 | Cold Guard Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 436 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 437 | 850 | ColdMain Prim Htr Calc Resistnce | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 438 | 850 | ColdMain Red Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 439 | 850 | Booster Htr Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 440 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 441 | 850 | HOTMain Prim•Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 442 | 850 | Hot Main Red Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 443 | 850 | Hot Guard Htr Calc Resistance | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 444 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 445 | 850 | Cold Guard Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 446 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 447 | 850 | Cold Main Prim Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 448 | 850 | Cold Main Red Htr Limited Power | | | 02 | | | | | | | | | | | | | | | | |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 20 of 38)

| ENT NO. | COR R. | DESCRIPTION | CMD UL K | USE | MN SO G. | NM OS I/G W D S / | S O P F I X D | T Y E | START WD | START BT | END WD | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COEF | C D T ? | RC IO D | SID NO. E | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 449 | 850 | Booster Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 450 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 451 | 850 | Hot Main Prim Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 452 | 850 | Hot Main Red Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 453 | 850 | Hot Guard Htr Limited Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 454 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 455 | 850 | Cold Guard Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 456 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 457 | 850 | Cold Main Prim Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 458 | 850 | Cold Main Red Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 459 | 850 | Booster Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 460 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 461 | 850 | Hot Main Prim Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 462 | 850 | Hot Main Red Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 463 | 850 | Hot Guard Htr Des Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 464 | 850 | Unused | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 465 | 850 | Cold Guard Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 466 | 850 | Cold Main Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 467 | 850 | Booster Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 468 | 850 | Hot Main Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 469 | 850 | Hot Guard Zone Saturation Flag | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 470 | 850 | Integral Power Fault Time | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 471 | 850 | Fault Sum Delta Power | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 472 | 850 | Fault Integral Gain | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 473 | 850 | Fault Proportional Gain | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 474 | 850 | Fault Intermediate Calc. Value 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 475 | 850 | Fault Intermediate Calc. Value 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 476 | 850 | Fault Delta Power - Previous | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 477 | 850 | Fault Delta Power - 2nd Previous | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 478 | 850 | Faulted Zone | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 21 of 38)

| ENT NO. | CORR NO. | DESCRIPTION | CMD ULK | USAGE | MN SO G. | NM OS I/G WDS/ | S O FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 479 | 850 | Integral Gain Array 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 480 | 850 | Integral Gain Array 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 481 | 850 | Integral Gain Array 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 482 | 850 | Integral Gain Array 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 483 | 850 | Integral Gain Array 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 484 | 850 | Proportional Gain Array 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 485 | 850 | Proportional Gain Array 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 486 | 850 | Proportional Gain Array 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 487 | 850 | Proportional Gain Array 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 488 | 850 | Proportional Gain Array 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 489 | 850 | FF Ampoule Align Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 490 | 850 | FF Ampoule Align Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 491 | 850 | FF Ampoule Align Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 492 | 850 | FF Ampoule Align Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 493 | 850 | FF Car Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 494 | 850 | FF Car Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 495 | 850 | FF Car Trk Extr Left Limit-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 496 | 850 | FF Car Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 497 | 850 | FF Car Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 498 | 850 | FF Car Spacer Plt Gap Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 499 | 850 | FF Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 500 | 850 | FF Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 501 | 850 | FF Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 502 | 850 | FF Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 503 | 850 | FF SEM Index Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 504 | 850 | FF SEM Index Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 505 | 850 | FF Fail Safe Brake RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 506 | 850 | FF Fail Safe Brake RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 507 | 850 | FF Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 508 | 850 | FF Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 22 of 38)

| ENT NO. | CNO RRR. | NO. | DESCRIPTION | CMD ULK | UIG E | MN SO G. | NM OS I/G WDS/ | S O P F I X D | T Y E | START WD # | START BT | END WD # | END BT | TYPE | DATA VALUE | MON REQ EVNT | MON REQ EXCP | CAL COF | CIRC DT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 509 | 850 | FF | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 510 | 850 | FF | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 511 | 850 | FF | Core HD Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 512 | 850 | FF | Core HD Motor RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 513 | 850 | FF | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 514 | 850 | FF | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 515 | 850 | FF | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 516 | 850 | FF | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 517 | 850 | FF | Ampoule Spt Plt Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 518 | 850 | FF | Ampoule Spt Plt Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 519 | 850 | FF | Ampoule Align Not Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 520 | 850 | FF | Ampoule Align Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 521 | 850 | FF | PCS Utility RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 522 | 850 | FF | PCS Utility RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 523 | 850 | FF | System Bus Relay Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 524 | 850 | FF | System Bus Relay On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 525 | 850 | FF | Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 526 | 850 | FF | Furnace Position Home | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 527 | 850 | FF | Furn Extrme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 528 | 850 | FF | Furn Extreme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 529 | 850 | FF | Step Motor Drive RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 530 | 850 | FF | Step Motor Drive RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 531 | 850 | FF | Step Motor Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 532 | 850 | FF | Step Motor Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 533 | 850 | FF | Rapid Xlation Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 534 | 850 | FF | Rapid Xlation Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 535 | 850 | FF | Rapid Xlation Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 536 | 850 | FF | Rapid Xlation Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 537 | 850 | FF | Water Inlet Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 538 | 850 | FF | Water Inlet Valve RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

## TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 23 of 38)

| ENT NO. | CORR. NO. | NO. | DESCRIPTION | CMD UL K | USAGE | MNSO G. | NMOS /G/WDS/ | SO FIXD | TYPE | DATA DESCRIPTION START WD# | START BT# | END WD# | END BT# | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. COF | CRDT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 539 | 850 | FF | Vacuum Vent Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 540 | 850 | FF | Vacuum Vent Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 541 | 850 | FF | Vacuum Vent Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 542 | 850 | FF | Vacuum Vent Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 543 | 850 | FF | IFEA ABS Press 2 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 544 | 850 | FF | IFEA ABS Press 2 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 545 | 850 | FF | IFEA ABS Press 1 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 546 | 850 | FF | IFEA ABS Press 1 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 547 | 850 | FF | Argon Fill Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 548 | 850 | FF | Argon Fill Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 549 | 850 | FF | Argon Fill Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 550 | 850 | FF | Argon Fill Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 551 | 850 | FF | SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 552 | 850 | FF | SEM Indexing Jog CCW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 553 | 850 | FF | Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 554 | 850 | FF | Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 555 | 850 | FF | Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 556 | 850 | FF | Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 557 | 850 | FF | Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 558 | 850 | FF | Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 559 | 850 | FF | Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 560 | 850 | FF | Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 561 | 850 | FF | Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 562 | 850 | FF | Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 563 | 850 | FF | Water Outlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 564 | 850 | FF | Water Outlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 565 | 850 | FF | Water Outlet Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 566 | 850 | FF | Water Outlet Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 567 | 850 | FF | Water Inlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 568 | 850 | FF | Water Inlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 24 of 38)

| ENT NO. | C O R R. | N O . | DESCRIPTION | CU MS DA G UE LK | MN SO G. | NM OS /G W D S / | S O P F I X D | T Y E | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCEPT | CAL L. COF | C D T ? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 569 | 850 | FF | Mech Pulsing Mod RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 570 | 850 | FF | Mech Pulsing Mod RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 571 | 850 | FF | Cartridge 6 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 572 | 850 | FF | Cartridge 6 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 573 | 850 | FF | Cartridge 5 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 574 | 850 | FF | Cartridge 5 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 575 | 850 | FF | Cartridge 4 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 576 | 850 | FF | Cartridge 4 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 577 | 850 | FF | Cartridge 3 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 578 | 850 | FF | Cartridge 3 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 579 | 850 | FF | Cartridge 2 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 580 | 850 | FF | Cartridge 2 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 581 | 850 | FF | Cartridge 1 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 582 | 850 | FF | Cartridge 1 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 583 | 850 | FF | Ampoule 6 Failure 2 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 584 | 850 | FF | Ampoule 6 Failure 1 Status | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 585 | 850 | FF | Hot Boost Mod A RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 586 | 850 | FF | Hot Boost Mod A RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 587 | 850 | FF | Cold Main Red Mod RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 588 | 850 | FF | Cold Main Red Mod RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 589 | 850 | FF | Cold Main Prim Mod RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 590 | 850 | FF | Cold Main Prim Mod RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 591 | 850 | FF | Cold Guard Mod RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 592 | 850 | FF | Cold Guard Mod RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 593 | 850 | FF | Peltier Conn Retracted-Not | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 594 | 850 | FF | Peltier Conn Retracted | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 595 | 850 | FF | Peltier Conn Extended-Not | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 596 | 850 | FF | Peltier Conn Extended | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 597 | 850 | FF | Peltier Conn Motor RCCB Off | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 598 | 850 | FF | Peltier Conn Motor RCCB On | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 25 of 38)

| ENT NO. | C O R R . | N O . | DESCRIPTION | C M D U L K | U S A G E | MN SO G. | NM OS /G W D S / | S O P F I X D | T Y P E | START WD # | START BT | END WD # | END BT | DATA VALUE T Y P E | MON REQ E V E N T | MON REQ E X C P T | C A L . C O F | C D T ? | RC IO D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 599 | 850 | FF | Peltier Pulsing Drv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 600 | 850 | FF | Peltier Pulsing Drv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 601 | 850 | FF | SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 602 | 850 | FF | PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 603 | 850 | FF | PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 604 | 850 | FF | PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 605 | 850 | FF | Hot Main Red Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 606 | 850 | FF | Hot Main Red Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 607 | 850 | FF | Hot Main Red Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 608 | 850 | FF | Hot Main Red Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 609 | 850 | FF | Hot Main Prim Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 610 | 850 | FF | Hot Main Prim Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 611 | 850 | FF | HotMain Prim Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 612 | 850 | FF | HotMain Prim Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 613 | 850 | FF | Hot Guard Module RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 614 | 850 | FF | Hot Guard Module RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 615 | 850 | FF | Hot Boost Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 616 | 850 | FF | Hot Boost Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 617 | 850 | FF | Hot Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 618 | 850 | FF | Cold Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 619 | 850 | FF | TC Group A Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 620 | 850 | FF | TC Group A Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 621 | 850 | FF | TC Group A Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 622 | 850 | FF | Cold Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 623 | 850 | FF | Cold Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 624 | 850 | FF | Booster Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 625 | 850 | FF | Hot Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 626 | 850 | FF | Hot Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 627 | 850 | FF | Hot Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 628 | 850 | FF | TC Group B Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 26 of 38)

| IDENT NO. | COR R. | NO. | DESCRIPTION | CMD I ULK | USAGE | MN SOG. | NM OS I/G W D S / | SO P F I X D | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CRC DT ? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 629 | 850 | FF | TC Group B Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 630 | 850 | FF | TC Group B Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 631 | 850 | FF | IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 632 | 850 | FF | IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 633 | 850 | FF | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 634 | 850 | FF | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 635 | 850 | FF | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 636 | 850 | FF | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 637 | 850 | FF | Cold Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 638 | 850 | FF | TC Group D Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 639 | 850 | FF | TC Group D Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 640 | 850 | FF | TC Group D Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 641 | 850 | FF | Cold Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 642 | 850 | FF | Cold Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 643 | 850 | FF | Booster Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 644 | 850 | FF | Hot Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 645 | 850 | FF | TC Group C Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 646 | 850 | FF | TC Group C Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 647 | 850 | FF | TC Group C Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 648 | 850 | FF | Hot Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 649 | 850 | FF | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 650 | 850 | FF | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 651 | 850 | FF | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 652 | 850 | FF | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 653 | 850 | FF | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 654 | 850 | FF | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 655 | 850 | FF | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 656 | 850 | FF | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 657 | 850 | FF | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 658 | 850 | FF | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 27 of 38)

| ENT NO. | COR. | NO. | DESCRIPTION | CMD/ULK | USAGE | MN SO G. | NM OS /G W D S / | SIF IXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CRC DT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 659 | 850 | FF | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 660 | 850 | FF | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 661 | 850 | FF | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 662 | 850 | FF | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 663 | 850 | FF | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 664 | 850 | FF | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 665 | 850 | FF | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 666 | 850 | FF | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 667 | 850 | FF | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 668 | 850 | FF | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 669 | 850 | FF | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 670 | 850 | FF | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 671 | 850 | FF | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 672 | 850 | FF | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 673 | 850 | FF | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 674 | 850 | FF | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 675 | 850 | FF | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 676 | 850 | FF | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 677 | 850 | FF | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 678 | 850 | FF | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 679 | 850 | FF | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 680 | 850 | FF | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 681 | 850 | FF | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 682 | 850 | FF | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 683 | 850 | FF | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 684 | 850 | FF | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 685 | 850 | FF | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 686 | 850 | FF | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 687 | 850 | FF | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 688 | 850 | FF | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 28 of 38)

| ENT NO. | COR R. R. | N O . | DESCRIPTION | CMD UL K | USAGE | MN SO G. | NM OS /G WDS/ | SO PFIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 689 | 850 | FF | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 690 | 850 | FF | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 691 | 850 | FF | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 692 | 850 | FF | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 693 | 850 | FF | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 694 | 850 | FF | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 695 | 850 | FF | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 696 | 850 | FF | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 697 | 850 | FF | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 698 | 850 | FF | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 699 | 850 | FF | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 700 | 850 | FF | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 701 | 850 | FF | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 702 | 850 | FF | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 703 | 850 | FF | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 704 | 850 | FF | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 705 | 850 | FF | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 706 | 850 | FF | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 707 | 850 | FF | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 708 | 850 | FF | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 709 | 850 | FF | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 710 | 850 | FF | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 711 | 850 | FF | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 712 | 850 | FF | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 713 | 850 | FF | Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 714 | 850 | FF | Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 715 | 850 | FF | Cold Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 716 | 850 | FF | Cold Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 717 | 850 | FF | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 718 | 850 | FF | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 29 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD BLK | USAGE | MN SO G. | NM OS ./G WDS/ | SO FIXD | TYPE | DATA DESCRIPTION START WD# | START BT# | END WD# | END BT# | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CRC DT? | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 719 | 850 | FF | RTD Mux 8 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 720 | 850 | FF | RTD Mux 8 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 721 | 850 | FF | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 722 | 850 | FF | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 723 | 850 | FF | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 724 | 850 | FF | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 725 | 850 | FF | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 726 | 850 | FF | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 727 | 850 | FF | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 728 | 850 | FF | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 729 | 850 | FF | IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 730 | 850 | FF | Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 731 | 850 | FF | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 732 | 850 | FF | Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 733 | 850 | FF | Stepping Motor Phase B Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 734 | 850 | FF | Stepping Motor Phase B Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 735 | 850 | FF | Stepping Motor Phase A Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 736 | 850 | FF | Stepping Motor Phase A Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 737 | 850 | FF | Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 738 | 850 | FF | Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 739 | 850 | FF | Hot Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 740 | 850 | FF | Hot Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 741 | 850 | FF | Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 742 | 850 | FF | Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 743 | 850 | FF | Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 744 | 850 | FF | Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 745 | 850 | FF | SMS Board Velocity Reading | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 746 | 850 | FF | Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 747 | 850 | FF | Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 748 | 850 | FF | IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 30 of 38)

| ENT NO. | CORR. | NO. | DESCRIPTION | CMD ULK | USAGE | MN SOG. | NM OS/GW/ D S/ | SOFIXD | TYPE | START WD | START BT | END WD | END BT | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXC | CAL. COEF | CDT? | RC IO D E | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 749 | 850 | FF | IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 750 | 850 | FF | IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 001 | 851 | RC | SEM Index Motor RCCB On Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 002 | 851 | RC | SEM Index Motor RCCB Off Stat | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 003 | 851 | RC | Ampoule Not Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 004 | 851 | RC | Ampoule Processing | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 005 | 851 | RC | Indexing Cam Not Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 006 | 851 | RC | Indexing Cam Stowed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 007 | 851 | RC | Car Spacer Plt Gap Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 008 | 851 | RC | Car Spacer Plt Gap Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 009 | 851 | RC | Car Trk Extr Left Limit-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 010 | 851 | RC | Car Trk Extr Left Limit | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 011 | 851 | RC | Car Trk Extr Right Lim-Not | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 012 | 851 | RC | Car Trk Extr Right Lim | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 013 | 851 | RC | Ampoule Align Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 014 | 851 | RC | Ampoule Align Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 015 | 851 | RC | Ampoule Align Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 016 | 851 | RC | Ampoule Align Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 017 | 851 | RC | Ampoule Align Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 018 | 851 | RC | Ampoule Align Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 019 | 851 | RC | Ampoule Spt Plt Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 020 | 851 | RC | Ampoule Spt Plt Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 021 | 851 | RC | Ampoule Support Not Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 022 | 851 | RC | Ampoule Support Secure | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 023 | 851 | RC | Ampoule Support Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 024 | 851 | RC | Ampoule Support Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 025 | 851 | RC | Core HD Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 026 | 851 | RC | Core HD Motor RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 027 | 851 | RC | Core Hold Down Not Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 028 | 851 | RC | Core Hold Down Extended | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

Column positions: 03, 06, 07, 39, 40, 43, 45, 47, 48, 51, 53, 55, 57, 65, 66, 67, 71, 72, 75, 78, 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 31 of 38)

| ENT NO. | CORR NO. | DESCRIPTION | CMD ULK | USAGE | MSO G. | NMSO I/G WDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 851 | RC Core Hold Down Not Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 030 | 851 | RC Core Hold Down Retracted | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 031 | 851 | RC Fail Safe Brake RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 032 | 851 | RC Fail Safe Brake RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 033 | 851 | RC Rapid Xlation Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 034 | 851 | RC Rapid Xlation Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 035 | 851 | RC Rapid Xlation Mtr RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 036 | 851 | RC Rapid Xlation Mtr RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 037 | 851 | RC Step Motor Clutch RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 038 | 851 | RC Step Motor Clutch RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 039 | 851 | RC Step Motor Drive RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 040 | 851 | RC Step Motor Drive RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 041 | 851 | RC Furn Extrme Trvl Not Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 042 | 851 | RC Furn Extrdme Trvl Exceeded | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 043 | 851 | RC Furnace Position Not Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 044 | 851 | RC Furnace Position Home | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 045 | 851 | RC System Bus Relay Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 046 | 851 | RC System Bus Relay On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 047 | 851 | RC PCS Utility RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 048 | 851 | RC PCS Utility RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 049 | 851 | RC SEM Indexing Jog CW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 050 | 851 | RC SEM Indexing Jog CCW Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 051 | 851 | RC Argon Fill Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 052 | 851 | RC Argon Fill Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 053 | 851 | RC Argon Fill Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 054 | 851 | RC Argon Fill Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 055 | 851 | RC IFEA ABS Press 1 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 056 | 851 | RC IFEA ABS Press 1 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 057 | 851 | RC IFEA ABS Press 2 RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 058 | 851 | RC IFEA ABS Press 2 RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 32 of 38)

| ENT NO. | COR R. | NO. | DESCRIPTION | CMD UL K | USAGE | MNSOG. | NMOS /GWDS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 059 | 851 | RC | Vacuum Vent Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 060 | 851 | RC | Vacuum Vent Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 061 | 851 | RC | Vacuum Vent Valve Closed | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 062 | 851 | RC | Vacuum Vent Valve Open | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 063 | 851 | RC | Water Inlet Valve RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 064 | 851 | RC | Water Inlet Valve RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 065 | 851 | RC | Water Inlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 066 | 851 | RC | Water Inlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 067 | 851 | RC | Water Outlet Vlv RCCB Off | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 068 | 851 | RC | Water Outlet Vlv RCCB On | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 069 | 851 | RC | Water Outlet Valve Bypass | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 070 | 851 | RC | Water Outlet Valve Normal | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 071 | 851 | RC | Ampoule 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 072 | 851 | RC | Ampoule 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 073 | 851 | RC | Ampoule 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 074 | 851 | RC | Ampoule 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 075 | 851 | RC | Ampoule 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 076 | 851 | RC | Ampoule 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 077 | 851 | RC | Ampoule 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 078 | 851 | RC | Ampoule 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 079 | 851 | RC | Ampoule 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 080 | 851 | RC | Ampoule 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 081 | 851 | RC | Ampoule 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 082 | 851 | RC | Ampoule 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 083 | 851 | RC | Cartridge 1 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 084 | 851 | RC | Cartridge 1 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 085 | 851 | RC | Cartridge 2 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 086 | 851 | RC | Cartridge 2 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 087 | 851 | RC | Cartridge 3 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 088 | 851 | RC | Cartridge 3 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

03 006 007 039 040 043 045 047 048 051 053 055 057 065 066 067 071 072 075 078 080

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 33 of 38)

| ENT NO. | CORR NO. | DESCRIPTION | CMD LK | USAGE | MN SOG. | NMOS /GW DS/ | SOFIXD | TYPE | START WD# | START BT | END WD# | END BT | DATA TYPE | DATA VALUE | MON REQ EVENT | EXC NCP | CAL. COEF | CDT2 | RCIO DE | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 089 | 851 | RC Cartridge 4 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 090 | 851 | RC Cartridge 4 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 091 | 851 | RC Cartridge 5 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 092 | 851 | RC Cartridge 5 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 093 | 851 | RC Cartridge 6 Failure 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 094 | 851 | RC Cartridge 6 Failure 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 095 | 851 | RC Mech Pulsing Mod RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 096 | 851 | RC Mech Pulsing Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 097 | 851 | RC Peltier Pulsing Drv RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 098 | 851 | RC Peltier Pulsing Drv RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 099 | 851 | RC Peltier Conn Motor RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 100 | 851 | RC Peltier Conn Motor RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 101 | 851 | RC Peltier Conn Extended-Not | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 102 | 851 | RC Peltier Conn Extended | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 103 | 851 | RC Peltier Conn Retracted-Not | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 104 | 851 | RC Peltier Conn Retracted | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 105 | 851 | RC Cold Guard Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 106 | 851 | RC Cold Guard Mod RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 107 | 851 | RC Cold Main Prim Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 108 | 851 | RC Cold Main Prim Mod RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 109 | 851 | RC Cold Main Red Mod RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 110 | 851 | RC Cold Main Red Mod RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 111 | 851 | RC Hot Boost Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 112 | 851 | RC Hot Boost Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 113 | 851 | RC Hot Boost Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 114 | 851 | RC Hot Boost Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 115 | 851 | RC Hot Guard Module RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 116 | 851 | RC Hot Guard Module RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 117 | 851 | RC HotMain Prim Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 118 | 851 | RC HotMain Prim Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80


a-4

TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 34 of 38)

| ENT NO. | CONN. NO. | DESCRIPTION | CMD ULK | USAGE | MN SOG. | NMOS /G/ WDS/ | SO FIXD | TYPE | START WD # | START BT | END WD # | END BT | DATA TYPE | DATA VALUE | MON EVNT | REQ EXCP | CAL COEF | CDT? | RCIO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 119 | 851 | RC Hot Main Prim Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 120 | 851 | RC Hot Main Prim Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 121 | 851 | RC Hot Main Red Mod A RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 122 | 851 | RC Hot Main Red Mod A RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 123 | 851 | RC Hot Main Red Mod B RCCB Off | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 124 | 851 | RC Hot Main Red Mod B RCCB On | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 125 | 851 | RC PCS Airflow 2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 126 | 851 | RC PCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 127 | 851 | RC SCS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 128 | 851 | RC PDS Airflow 1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 129 | 851 | RC IFEA Coolant Flow #2 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 130 | 851 | RC IFEA Coolant Flow #1 Status | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 131 | 851 | RC TC Group B Calibration Type S | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 132 | 851 | RC TC Group B Calibration Type K | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 133 | 851 | RC Hot Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 134 | 851 | RC TC Group B Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 135 | 851 | RC Hot Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 136 | 851 | RC Hot Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 137 | 851 | RC Cold Main Prim Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 138 | 851 | RC Booster Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 139 | 851 | RC TC Group A Calibration Type K | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 140 | 851 | RC Cold Guard Heater Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 141 | 851 | RC TC Group A Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 142 | 851 | RC TC Group A Calibration Type S | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 143 | 851 | RC Hot Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 144 | 851 | RC Cold Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 145 | 851 | RC TC Group C Calibration Type K | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 146 | 851 | RC Hot Main Red Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 147 | 851 | RC TC Group C Calibration Type B | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 148 | 851 | RC TC Group C Calibration Type S | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

03 06 07 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 35 of 38)

| ENT NO. | C NO. | N O R R . | DESCRIPTION | C M D L K | U S A G E | MN SO G. | NM OS /G W D S / | S O F I X D | T Y P E | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | C D T ? | RC IO D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 149 | 851 | RC | Booster Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 150 | 851 | RC | Hot Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 151 | 851 | RC | Cold Guard Heater Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 152 | 851 | RC | Cold Main Prim Htr Ctl Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 153 | 851 | RC | TC Group D Calibration Type S | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 154 | 851 | RC | TC Group D Calibration Type K | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 155 | 851 | RC | Cold Main Red Htr Ctl Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 156 | 851 | RC | TC Group D Calibration Type B | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 157 | 851 | RC | Sample 2 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 158 | 851 | RC | Sample 1 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 159 | 851 | RC | Sample 4 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 160 | 851 | RC | Sample 3 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 161 | 851 | RC | Sample 6 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 162 | 851 | RC | Sample 5 Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 163 | 851 | RC | Sample 2 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 164 | 851 | RC | Sample 1 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 165 | 851 | RC | Sample 4 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 166 | 851 | RC | Sample 3 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 167 | 851 | RC | Sample 6 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 168 | 851 | RC | Sample 5 Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 169 | 851 | RC | Sample 2 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 170 | 851 | RC | Sample 1 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 171 | 851 | RC | Sample 4 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 172 | 851 | RC | Sample 3 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 173 | 851 | RC | Sample 6 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 174 | 851 | RC | Sample 5 Temp 3 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 175 | 851 | RC | Sample 2 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 176 | 851 | RC | Sample 1 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 177 | 851 | RC | Sample 4 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 178 | 851 | RC | Sample 3 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |

003 006 007 39 40 43 45 47 48 51 53 55 57 65 66 67 71 72 75 78 80.

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 36 of 38)

| ENT NO. | CONR. | NO. | DESCRIPTION | CMDULK | USAGE | MNSOG. | NMOS/G/WDS/ | SOFIXD | TYPE | DATA DESCRIPTION START WD# | START BT | END WD# | END BT | DATA VALUE TYPE | MON REQ EVNT | MON REQ EXCP | CAL. COF | CDT? | RC IO DE | SID NO. | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 179 | 851 | RC | Sample 6 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 180 | 851 | RC | Sample 5 Temp 4 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 181 | 851 | RC | Sample 2 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 182 | 851 | RC | Sample 1 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 183 | 851 | RC | Sample 4 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 184 | 851 | RC | Sample 3 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 185 | 851 | RC | Sample 6 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 186 | 851 | RC | Sample 5 Temp 5 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 187 | 851 | RC | Sample 2 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 188 | 851 | RC | Sample 1 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 189 | 851 | RC | Sample 4 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 190 | 851 | RC | Sample 3 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 191 | 851 | RC | Sample 5 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 192 | 851 | RC | Sample 6 Temp 6 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 193 | 851 | RC | IFEA Water Inlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 194 | 851 | RC | IFEA Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 195 | 851 | RC | RFM Hot End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 196 | 851 | RC | RFM Cold End Shell Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 197 | 851 | RC | Hot Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 198 | 851 | RC | Hot Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 199 | 851 | RC | Cold Zone CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 200 | 851 | RC | Cold Zone CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 201 | 851 | RC | Sample 1 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 202 | 851 | RC | RFM Water Outlet Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 203 | 851 | RC | Sample 2 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 204 | 851 | RC | Sample 1 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 205 | 851 | RC | Sample 3 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 206 | 851 | RC | Sample 2 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 207 | 851 | RC | Sample 4 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 208 | 851 | RC | Sample 3 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 37 of 38)

| ENT NO. | CO R R . | NO. | DESCRIPTION | CMD LK | USAGE | MN SO G. | NM OS /G W D S / | SO PF IX D | TY PE | START WD # | START BT # | END WD # | END BT # | DATA VALUE TYPE | MON REQ EVENT | MON REQ EXCP | CAL. CO. F | CRC DT ? | RC IO D E | SID NO. | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 209 | 851 | RC | Sample 5 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 210 | 851 | RC | Sample 4 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 211 | 851 | RC | Sample 6 CJ Block Temp 1 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 212 | 851 | RC | Sample 5 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 213 | 851 | RC | Ampoule Alignment Arm Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 214 | 851 | RC | Sample 6 CJ Block Temp 2 | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 215 | 851 | RC | FTS Stepping Motor Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 216 | 851 | RC | SEM Track Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 217 | 851 | RC | IFEA Upper Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 218 | 851 | RC | IFEA Lower Atmosphere Temp | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 219 | 851 | RC | RTD Mux 1 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 220 | 851 | RC | RTD Mux 1 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 221 | 851 | RC | RTD Mux 2 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 222 | 851 | RC | RTD Mux 2 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 223 | 851 | RC | RTD Mux 3 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 224 | 851 | RC | RTD Mux 3 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 225 | 851 | RC | RTD Mux 4 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 226 | 851 | RC | RTD Mux 4 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 227 | 851 | RC | RTD Mux 5 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 228 | 851 | RC | RTD Mux 5 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 229 | 851 | RC | RTD Mux 6 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 230 | 851 | RC | RTD Mux 6 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 231 | 851 | RC | RTD Mux 7 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 232 | 851 | RC | RTD Mux 7 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 233 | 851 | RC | RTD Mux 8 Calibration - Low | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 234 | 851 | RC | RTD Mux 8 Calibration - High | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 235 | 851 | RC | Cold Guard Heater Current | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 236 | 851 | RC | Cold Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 237 | 851 | RC | Cold Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 238 | 851 | RC | Cold Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | 41 | 2 |
| 03 | 06 | 07 | | 39 | 40 | 43 | 45 | 47 | 48 | 51 | 53 | 55 | 57 | | 65 | 66 | 67 | 71 | 72 | 75 | 78 | 80 |

# TABLE 2.7-2. SIGNAL INTERFACE DEFINITION EXPANSION (Sheet 38 of 38)

| ENT NO. | C O R R . | N O . | DESCRIPTION | C M D U L K | U S A G E | MN SO G. | NM OS /G W D S / | S O F I X D | T Y P E | DATA DESCRIPTION START WD # | START BT | END WD # | END BT | DATA TYPE | DATA VALUE | MON REQ EVNT | MON REQ EXCP | C A L . C O F | C D T ? | RC IO D E | SID NO. | E X P I D | T A B L E |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 239 | 851 | RC | Cold Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 240 | 851 | RC | Cold Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 241 | 851 | RC | Hot Boost Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 242 | 851 | RC | Hot Boost Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 243 | 851 | RC | Hot Guard Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 244 | 851 | RC | Hot Guard Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 245 | 851 | RC | Hot Main Primary Heater Cur | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 246 | 851 | RC | Hot Main Primary Heater Volt | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 247 | 851 | RC | Hot Main Red Heater Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 248 | 851 | RC | Hot Main Red Heater Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 249 | 851 | RC | Stepping Motor Phase A Cur | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 250 | 851 | RC | Stepping Motor Phase A Volt | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 251 | 851 | RC | Stepping Motor Phase B Cur | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 252 | 851 | RC | Stepping Motor Phase B Volt | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 253 | 851 | RC | Indexing CAM Rotary Position | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 254 | 851 | RC | Furnace Linear Position | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 255 | 851 | RC | IFEA Lower Humidity | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 256 | 851 | RC | Rapid Translation Motor RPM | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 257 | 851 | RC | IFEA Absolute Pressure 1 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 258 | 851 | RC | IFEA Upper Humidity | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 259 | 851 | RC | Experiment Main Bus Current | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 260 | 851 | RC | IFEA Absolute Pressure 2 | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 261 | 851 | RC | SMS Board Velocity Reading | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 262 | 851 | RC | Experiment Main Bus Voltage | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 263 | 851 | | Process Elapsed Time - Seconds | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 264 | 851 | | Go/NoGo Error Override | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 265 | 851 | | CGF Sytstem State | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |
| 266 | 851 | | Auto Pressure Ctl | | | 02 | | | | | | | | | | | | | | | | 41 | 2 |

0 0 0 3 4 4 4 4 4 5 5 5 5 6 6 6 7 7 7 7 8
3 6 7 9 0 3 5 7 8 1 3 5 7 5 6 7 1 2 5 8 0

# TABLE 2.7-3. EVENT/EXCEPTION MONITOR REQUIREMENTS

| ENTRY NUMBER | C N O R R | EMR XOA CNT PIE TT IO OR N | MONITOR VALUES: UPPER LIMIT | MONITOR VALUES: LOWER LIMIT/ EXPT'D STATE | MSG CLS | MESSAGE (HIGH/SINGLE) | ERROR MSG. GRP. | ERROR MSG. NO. | MESSAGE LOW | ERROR MSG. GRP. | ERROR MSG. NO. | INTRLOCK / TIME | COUNT | OUTPUT | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 207 | 106 | 001 | -073 | -128 | 1 | HI WATER TEMP | 41 | 14 | | 41 | | 300 | 10 | CGF | 41 | 4 |
| 208 | 106 | 001 | -077 | -128 | 1 | HI HUMIDITY LWR | 41 | 16 | | 41 | | 300 | 10 | CGF | 41 | 4 |
| 209 | 106 | 001 | -077 | -128 | 1 | HI HUMIDITY UPR | 41 | 18 | | 41 | | 300 | 10 | CGF | 41 | 4 |
| 210 | 106 | 001 | -004 | -128 | 1 | HI ATMOS TEMP | 41 | 1A | | 41 | | 300 | 10 | MAN | 41 | 4 |
| 211 | 106 | 001 | -073 | -128 | 1 | HI CLD END TEMP | 41 | 1C | | 41 | | 300 | 10 | MAN | 41 | 4 |
| 212 | 106 | 001 | -073 | -128 | 1 | HI HOT END TEMP | 41 | 1E | | 41 | | 300 | 10 | MAN | 41 | 4 |
| 215 | 106 | 001 | -009 | -073 | 1 | HI IFEA PRES 1 | 41 | 20 | LO IFEA PRES 1 | 41 | 21 | 300 | 10 | CGF | 41 | 4 |
| 216 | 106 | 001 | -009 | -073 | 1 | HI IFEA PRES 2 | 41 | 22 | LO IFEA PRES 2 | 41 | 23 | 300 | 10 | CGF | 41 | 4 |
| 219 | 106 | 001 | +105 | -128 | 1 | HI MAIN CURRENT | 41 | 24 | | 41 | | 300 | 10 | CGF | 41 | 4 |
| 220 | 106 | 001 | +076 | +018 | 1 | HI MAIN VOLTAGE | 41 | 26 | LO MAIN VOLTAGE | 41 | 27 | 300 | 10 | CGF | 41 | 4 |
| 223 | 106 | 001 | | 1 | 1 | LO WATER FLOW | 41 | 28 | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 224 | 106 | 001 | | 1 | 1 | LO WATER FLOW | 41 | 2A | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 237 | 106 | 001 | | 1 | 1 | NO AVIONICS AIR | 41 | 2C | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 238 | 106 | 001 | | 1 | 1 | NO AVIONICS AIR | 41 | 2E | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 239 | 106 | 001 | | 1 | 1 | NO AVIONICS AIR | 41 | 30 | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 240 | 106 | 001 | | 1 | 1 | NO AVIONICS AIR | 41 | 32 | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 265 | 106 | 001 | | 1 | 1 | WTR OUT BYPASS | 41 | 34 | | 41 | | 300 | 05 | MAN | 41 | 4 |
| 266 | 106 | 001 | | 0 | 1 | WTR OUT BYPASS | 41 | 36 | | 41 | | 300 | 05 | MAN | 41 | 4 |
| 267 | 106 | 001 | | 1 | 1 | WTR IN BYPASS | 41 | 38 | | 41 | | 300 | 05 | MAN | 41 | 4 |
| 268 | 106 | 001 | | 0 | 1 | WTR IN BYPASS | 41 | 3A | | 41 | | 300 | 05 | MAN | 41 | 4 |
| 287 | 106 | 001 | | 1 | 1 | EXTRM TRVL LIM | 41 | 3C | | 41 | | 300 | 05 | FTS | 41 | 4 |
| 288 | 106 | 001 | | 0 | 1 | EXTRM TRVL LIM | 41 | 3E | | 41 | | 300 | 05 | FTS | 41 | 4 |
| 319 | 106 | 001 | | 0 | 1 | EXP BUS PWR OFF | 41 | 40 | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 320 | 106 | 001 | | 1 | 1 | EXP BUS PWR OFF | 41 | 42 | | 41 | | 300 | 05 | CGF | 41 | 4 |
| 03 | 06 | 09 | 17 | 25 | 26 | 27 | 43 | 45 | 46 | 62 | 64 | 67 | 69 | 72 | 79 | 80 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 1 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// | |
| 001 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 002 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 004 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 005 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 138 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 139 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 140 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 141 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 142 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 143 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 144 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 145 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 146 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 147 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 148 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 149 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 150 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 151 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 152 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 153 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 154 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 155 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 156 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 157 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 158 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 159 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 160 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 161 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 162 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 163 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 2 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | | //// | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | A0 | A1 | A2 | A3 | A4 | A5 | | EXP ID | TABLE |
| 164 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 165 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 166 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 167 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 168 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 169 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 170 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 171 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 172 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 173 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 174 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 175 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 176 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 177 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 178 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 179 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 180 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 181 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 182 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 183 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 184 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 185 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 187 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 188 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 189 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 190 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 191 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 192 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 193 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 194 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 195 | 850 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 3 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 196 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 197 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 198 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 199 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 200 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 201 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 202 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 203 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 204 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 205 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 206 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 207 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 208 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 209 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 210 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 211 | 850 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 212 | 850 | PC | +0000000+00 | +3663000-01 | | | | | 41 | 6 |
| 213 | 850 | PC | +0000000+00 | +9768000-02 | | | | | 41 | 6 |
| 214 | 850 | PC | +0000000+00 | +2442000-01 | | | | | 41 | 6 |
| 215 | 850 | PC | +0000000+00 | +2442000-01 | | | | | 41 | 6 |
| 216 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 217 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 218 | 850 | PC | -2419000+03 | +2325500+01 | +9104500-03 | +2442500-06 | | | 41 | 6 |
| 219 | 850 | PC | -2419000+03 | +2325500+01 | +9104500-03 | +2442500-06 | | | 41 | 6 |
| 220 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 221 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 222 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 223 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 224 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 225 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 226 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 003 005 | 007 | | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 4 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL B |
|---|---|---|---|---|---|---|---|---|---|---|
| 227 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 228 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 229 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 230 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 231 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 232 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 233 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 234 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 235 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 236 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 237 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 238 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 239 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 240 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 241 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 242 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 243 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 244 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 245 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 246 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 247 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 248 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 249 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 250 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 251 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 252 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 253 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 254 | 850 | PC | -1089200+02 | +2705600+02 | -1504300+00 | +1159800-02 | +4582500-04 | -5337600-06 | 41 | 6 |
| 255 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 256 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 257 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 5 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | | |
| 258 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 259 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 260 | 850 | PC | +1493200+02 | +1381000+03 | -8505200+01 | +9220100+00 | -5706400-01 | +1394700-02 | 41 | 6 |
| 261 | 850 | PC | +0000000+00 | +1743900-02 | | | | | 41 | 6 |
| 262 | 850 | PC | +0000000+00 | +5086300-02 | | | | | 41 | 6 |
| 263 | 850 | PC | +0000000+00 | +1743900-02 | | | | | 41 | 6 |
| 264 | 850 | PC | +0000000+00 | +5086300-02 | | | | | 41 | 6 |
| 265 | 850 | PC | -2566000+01 | +1364100+00 | | | | | 41 | 6 |
| 266 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 267 | 850 | PC | +0000000+00 | +1627600+01 | | | | | 41 | 6 |
| 268 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 269 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 270 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 271 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 272 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 273 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 274 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 275 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 276 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 277 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 278 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 279 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 280 | 850 | PC | +0000000+00 | +7326000-02 | | | | | 41 | 6 |
| 281 | 850 | PC | +0000000+00 | +1953600-01 | | | | | 41 | 6 |
| 282 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 283 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 284 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 285 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 286 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 287 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 288 | 850 | PC | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 6 of 20)

| ENTRY | NUMBER | COLOR | CALIBRATION | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// | |
| 289 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 290 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 291 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 292 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 293 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 294 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 295 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 296 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 297 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 298 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 299 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 300 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 301 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 302 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 303 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 304 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 305 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 306 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 307 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 308 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 309 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 310 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 311 | 850 | PC | | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 312 | 850 | PC | | +0000000+00 | +8302800-01 | | | | | 41 | 6 |
| 313 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 314 | 850 | PC | | -2414600+03 | +2297900+00 | +1211300-04 | -4356500-09 | | | 41 | 6 |
| 315 | 850 | PC | | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 316 | 850 | PC | | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 317 | 850 | PC | | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 318 | 850 | PC | | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 319 | 850 | PC | | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 03 | 05 | 07 | | 18 | 29 | 40 | 51 | 62 | 73 | 79 | 80 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 7 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 320 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 321 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 322 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 323 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 324 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 325 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 326 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 327 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 328 | 850 | PC | +9760000+03 | +2442000+00 | | | | | 41 | 6 |
| 329 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 330 | 850 | PC | +6810000+02 | +2442000-01 | | | | | 41 | 6 |
| 331 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 332 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 333 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 334 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 335 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 336 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 337 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 338 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 339 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 340 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 341 | 850 | PC | +0000000+00 | +3125000+00 | | | | | 41 | 6 |
| 342 | 850 | PC | +0000000+00 | +2500000+00 | | | | | 41 | 6 |
| 343 | 850 | PC | +0000000+00 | +7096670-04 | | | | | 41 | 6 |
| 344 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 345 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 346 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 347 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 348 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 349 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 350 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |

# TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 8 of 20)

| ENTRY | NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | ///// | |
| 352 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 353 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 354 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 356 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 357 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 358 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 360 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 361 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 362 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 363 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 364 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 365 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 366 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 369 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 370 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 371 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 372 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 373 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 374 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 377 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 378 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 379 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 380 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 381 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 382 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 385 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 386 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 387 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 388 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 389 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 390 | 850 | | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 9 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 391 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 392 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 393 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 394 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 395 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 396 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 397 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 398 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 399 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 400 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 401 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 402 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 403 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 404 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 405 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 406 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 407 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 408 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 409 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 410 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 411 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 412 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 413 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 414 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 415 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 417 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 418 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 419 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 421 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 422 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 423 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |

003 005 007 018 029 040 051 062 073 079 080

## TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 10 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 425 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 427 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 428 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 429 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 431 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 432 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 433 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 435 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 437 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 438 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 439 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 441 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 442 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 443 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 445 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 447 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 448 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 449 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 451 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 452 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 453 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 455 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 457 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 458 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 459 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 461 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 462 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 463 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 470 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 471 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 472 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 11 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TAB LB |
|---|---|---|---|---|---|---|---|---|---|---|
| 473 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 474 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 475 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 476 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 477 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 478 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 479 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 480 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 481 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 482 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 483 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 484 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 485 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 486 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 487 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 488 | 850 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 001 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 002 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 004 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 005 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 006 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 007 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 008 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 009 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 010 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 011 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 012 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 013 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 014 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 015 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |

003 005 007 018 029 040 051 062 073 079 080

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 12 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | //// EXP ID | TABL B |
|---|---|---|---|---|---|---|---|---|---|---|
| 016 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 017 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 018 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 019 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 020 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 021 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 022 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 023 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 024 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 025 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 026 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 027 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 028 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 029 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 030 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 031 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 032 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 033 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 034 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 035 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 036 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 037 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 038 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 039 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 040 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 041 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 042 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 043 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 044 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 045 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 046 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 13 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 047 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 048 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 049 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 050 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 051 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 052 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 053 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 054 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 055 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 056 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 057 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 058 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 059 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 060 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 061 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 062 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 063 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 064 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 065 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 066 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 067 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 068 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 069 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 070 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 071 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 072 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 073 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 074 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 075 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 076 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 077 | 851 | PC | +0000000+00 | +1000000+01 | | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 14 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| 078 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 079 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 080 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 081 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 082 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 083 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 084 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 085 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 086 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 087 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 088 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 089 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 090 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 091 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 092 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 093 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 094 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 095 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 096 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 097 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 098 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 099 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 100 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 101 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 102 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 103 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 104 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 105 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 106 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 107 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 108 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 15 of 20)

| ENTRY | NUMBER | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 109 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 110 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 111 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 112 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 113 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 114 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 115 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 116 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 117 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 118 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 119 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 120 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 121 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 122 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 123 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 124 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 125 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 126 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 127 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 128 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 129 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 130 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 131 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 132 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 133 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 134 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 135 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 136 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 137 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 138 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 139 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 16 of 20)

| ENTRY | NUMBER CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLB |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | //// | |
| 140 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 141 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 142 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 143 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 144 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 145 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 146 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 147 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 148 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 149 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 150 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 151 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 152 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 153 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 154 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 155 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 156 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 157 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 158 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 159 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 160 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 161 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 162 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 163 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 164 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 165 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 166 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 167 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 168 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 169 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 170 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 17 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 171 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 172 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 173 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 174 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 175 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 176 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 177 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 178 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 179 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 180 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 181 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 182 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 183 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 184 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 185 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 186 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 187 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 188 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 189 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 190 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 191 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 192 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 193 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 194 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 195 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 196 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 197 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 198 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 199 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 200 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 201 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 18 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS | | | | | | //// | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
| 202 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 203 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 204 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 205 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 206 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 207 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 208 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 209 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 210 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 211 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 212 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 213 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 214 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 215 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 216 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 217 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 218 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 219 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 220 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 221 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 222 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 223 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 224 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 225 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 226 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 227 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 228 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 229 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 230 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 231 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 232 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 018 | 029 | 040 | 051 | 062 | 073 | 079 | 080 |

# TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 19 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABL |
|---|---|---|---|---|---|---|---|---|---|---|
| 233 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 234 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 235 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 236 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 237 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 238 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 239 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 240 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 241 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 242 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 243 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 244 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 245 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 246 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 247 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 248 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 249 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 250 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 251 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 252 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 253 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 254 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 255 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 256 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 257 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 258 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 259 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 260 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 261 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 262 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 263 | 851 | PC | +0000000+00 | +5000000-01 | | | | | 41 | 6 |
| 03 | 05 | 07 | 18 | 29 | 40 | 51 | 62 | 73 | 79 | 80 |

TABLE 2.7-4. POIC DISPLAY REQUIREMENTS (Sheet 20 of 20)

| ENTRY NUMBER | CORR NO | CALIBRATION TYPE | CALIBRATION COEFFICIENTS/LINEAR SEGMENTS A0 | A1 | A2 | A3 | A4 | A5 | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 265 | 851 | PC | +0000000+00 | +1000000+01 | | | | | 41 | 6 |
| 003 | 005 | 007 | 18 | 29 | 40 | 51 | 62 | 73 | 79 | 80 |

# TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 1 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 850 | EM | | | | 0 | CDAS FAILURE-BITE #1 (Tbl 1) | OK | FAIL | 41 | 7 |
| 002 | 850 | EM | | | | 0 | CDAS FAILURE-BITE #2 (Tbl 1) | OK | FAIL | 41 | 7 |
| 003 | 850 | EM | | | | 0 | PDS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 004 | 850 | EM | | | | 1 | PDS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 005 | 850 | EM | | | | 0 | SCS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 006 | 850 | | | | | | | YES | NO | 41 | 7 |
| 006 | 850 | EM | | | | 1 | SCS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 007 | 850 | | | | | | | NO | YES | 41 | 7 |
| 007 | 850 | EM | | | | 0 | CDAS PWR OFF (Tbl 1) | ON | OFF | 41 | 7 |
| 008 | 850 | EM | | | | 1 | EXTRM TRAVEL LIMIT EXCEEDED | YES | NO | 41 | 7 |
| 008 | 850 | EM | | | | 1 | CDAS PWR OFF (Tbl 1) | OFF | ON | 41 | 7 |
| 009 | 850 | EM | | | | 0 | EXTRM TRAVEL LIMIT EXCEEDED | NO | YES | 41 | 7 |
| 010 | 850 | | | | | | | YES | NO | 41 | 7 |
| 011 | 850 | | | | | | | NO | YES | 41 | 7 |
| 011 | 850 | EM | | | | 1 | NO AVIONICS AIR-SCS #2 (Tbl | FAIL | OK | 41 | 7 |
| 012 | 850 | EM | | | | | | YES | NO | 41 | 7 |
| 012 | 850 | EM | | | | 1 | NO AVIONICS AIR-PDS #2 (Tbl | FAIL | OK | 41 | 7 |
| 013 | 850 | | | | | | | NO | YES | 41 | 7 |
| 014 | 850 | EM | | | | 1 | WATER OUTLET BYPASS | BYPS | NORM | 41 | 7 |
| 015 | 850 | EM | | | | 0 | WATER OUTLET BYPASS | NORM | BYPS | 41 | 7 |
| 016 | 850 | EM | | | | 1 | WATER INLET BYPASS | BYPS | NORM | 41 | 7 |
| 017 | 850 | EM | | | | 0 | WATER INLET BYPASS | NORM | BYPS | 41 | 7 |
| 018 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 019 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 020 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 021 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 022 | 850 | | | | | | | YES | NO | 41 | 7 |
| 023 | 850 | | | | | | | NO | YES | 41 | 7 |
| 024 | 850 | | | | | | | YES | NO | 41 | 7 |
| 025 | 850 | | | | | | | NO | YES | 41 | 7 |
| 026 | 850 | | | | | | | YES | NO | 41 | 7 |
| 027 | 850 | | | | | | | NO | YES | 41 | 7 |
| 028 | 850 | | | | | | | NO | YES | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

# TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 2 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 029 | 850 | | | | | | | NO | YES | 41 | 7 |
| 030 | 850 | | | | | | | YES | NO | 41 | 7 |
| 031 | 850 | | | | | | | NO | YES | 41 | 7 |
| 032 | 850 | | | | | | | YES | NO | 41 | 7 |
| 033 | 850 | | | | | | | NO | YES | 41 | 7 |
| 034 | 850 | | | | | | | YES | NO | 41 | 7 |
| 035 | 850 | | | | | | | NO | YES | 41 | 7 |
| 036 | 850 | | | | | | | YES | NO | 41 | 7 |
| 037 | 850 | | | | | | | NO | YES | 41 | 7 |
| 038 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 039 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 040 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 041 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 042 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 043 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 044 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 045 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 046 | 850 | EM | | | | 1 | NO AVIONICS AIR - PDS #1 | FAIL | OK | 41 | 7 |
| 047 | 850 | EM | | | | 1 | NO AVIONICS AIR - PCS #1 | FAIL | OK | 41 | 7 |
| 048 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 049 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 050 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 051 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 052 | 850 | EM | | | | 1 | LO IFEA WATER FLOW #1 | FAIL | OK | 41 | 7 |
| 053 | 850 | EM | | | | 1 | NO AVIONICS AIR - SCS #1 | FAIL | OK | 41 | 7 |
| 054 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 055 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 056 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 057 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 058 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 059 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 060 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 061 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 3 of 14)

| ENTRY | NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 062 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 063 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 064 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 065 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 066 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 067 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 068 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 069 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 070 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 071 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 072 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 073 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 074 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 075 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 076 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 077 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 078 | 850 | | | | | | | YES | NO | 41 | 7 |
| 079 | 850 | | | | | | | NO | YES | 41 | 7 |
| 080 | 850 | | | | | | | YES | NO | 41 | 7 |
| 081 | 850 | | | | | | | NO | YES | 41 | 7 |
| 082 | 850 | | | | | | | YES | NO | 41 | 7 |
| 083 | 850 | | | | | | | NO | YES | 41 | 7 |
| 084 | 850 | | | | | | | CLS | OPN | 41 | 7 |
| 085 | 850 | | | | | | | OPN | CLS | 41 | 7 |
| 086 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 087 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 088 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 089 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 090 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 091 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 092 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 093 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 094 | 850 | | | | | | | ON | OFF | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

# TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 4 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 095 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 096 | 850 | EM | | | | 1 | LO IFEA WATER FLOW #2 | FAIL | OK | 41 | 7 |
| 097 | 850 | EM | | | | 1 | NO AVIONICS AIR - PCS #2 | FAIL | OK | 41 | 7 |
| 098 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 099 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 100 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 101 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 102 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 103 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 104 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 105 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 106 | 850 | EM | | | | 0 | PCS UTILITY PWR OFF | ON | OFF | 41 | 7 |
| 107 | 850 | EM | | | | 1 | PCS UTILITY PWR OFF | OFF | ON | 41 | 7 |
| 108 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 109 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 110 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 111 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 112 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 113 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 114 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 115 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 116 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 117 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 118 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 119 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 120 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 121 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 122 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 123 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 124 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 125 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 126 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 127 | 850 | | | | | | | OFF | ON | 41 | 7 |

003 005 012 020 028 036 038 066 072 079 081 083

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 5 of 14)

| ENTRY NUMBER | CON NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 128 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 129 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 130 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 131 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 132 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 133 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 134 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 135 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 136 | 850 | | | | | | | ON | OFF | 41 | 7 |
| 137 | 850 | | | | | | | OFF | ON | 41 | 7 |
| 186 | 850 | | | | | | | NO | YES | 41 | 7 |
| 200 | 850 | EM | | | | 1 | | WAIT | RUN | 41 | 7 |
| 212 | 850 | LS | 3740 | | 3740 | | HI EXP MAIN BUS CURRENT | | | 41 | 7 |
| 213 | 850 | LS | 3358 | 2396 | | | EXP MAIN BUS VOLTAGE OOL | | | 41 | 7 |
| 214 | 850 | LS | 410 | | 819 | | HI IFEA LOWER HUMIDITY | | | 41 | 7 |
| 215 | 850 | LS | 410 | | 819 | | HI IFEA UPPER HUMIDITY | | | 41 | 7 |
| 216 | 850 | LS | 1911 | 887 | 1979 | 887 | IFEA PRESSURE 1 OOL | | | 41 | 7 |
| 217 | 850 | LS | 1911 | 887 | 1979 | 887 | IFEA PRESSURE 2 OOL | | | 41 | 7 |
| 218 | 850 | LS | 1954 | | 2035 | | HI LOWER ATMOS TEMP | | | 41 | 7 |
| 219 | 850 | LS | 1954 | | 2035 | | HI UPPER ATMOS TEMP | | | 41 | 7 |
| 220 | 850 | LS | 504 | | 585 | | HI IFEA WATER INLET TEMP | | | 41 | 7 |
| 221 | 850 | LS | 827 | | 907 | | HI IFEA WATER OUTLET TEMP | | | 41 | 7 |
| 222 | 850 | LS | 827 | | 907 | | HI CLD END SHELL TEMP | | | 41 | 7 |
| 223 | 850 | LS | 827 | | 907 | | HI HOT END SHELL TEMP | | | 41 | 7 |
| 224 | 850 | LS | 827 | | 907 | | HI RFM WATER OUTLET TEMP | | | 41 | 7 |
| 261 | 850 | LS | 2007 | | 2007 | | HI STEP MTR PHASE A CURRENT | | | 41 | 7 |
| 262 | 850 | LS | 2163 | | 2163 | | HI STEP MTR PHASE A VOLTAGE | | | 41 | 7 |
| 263 | 850 | LS | 2007 | | 2007 | | HI STEP MTR PHASE B CURRENT | | | 41 | 7 |
| 264 | 850 | LS | 2163 | | 2163 | | HI STEP MTR PHASE B VOLTAGE | | | 41 | 7 |
| 266 | 850 | LS | 827 | | 1067 | | HI FTS STEPPER MOTOR TEMP | | | 41 | 7 |
| 268 | 850 | LS | 3003 | | 3003 | | HI COLD GUARD HTR CURRENT | | | 41 | 7 |
| 269 | 850 | LS | 1536 | | 1536 | | HI COLD GUARD HTR VOLTAGE | | | 41 | 7 |
| 270 | 850 | LS | 3003 | | 3003 | | HI COLD PRIM HTR CURRENT | | | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 6 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXP ID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 271 | 850 | LS | 1536 | | 1536 | | HI COLD PRIM HTR VOLTAGE | | | 41 | 7 |
| 272 | 850 | LS | 3003 | | 3003 | | HI COLD RED HTR CURRENT | | | 41 | 7 |
| 273 | 850 | LS | 1536 | | 1536 | | HI COLD RED HTR VOLTAGE | | | 41 | 7 |
| 274 | 850 | LS | 3003 | | 3003 | | HI BOOST HTR CURRENT | | | 41 | 7 |
| 275 | 850 | LS | 3072 | | 3072 | | HI BOOST HTR VOLTAGE | | | 41 | 7 |
| 276 | 850 | LS | 3003 | | 3003 | | HI HOT GUARD HTR CURRENT | | | 41 | 7 |
| 277 | 850 | LS | 1536 | | 1536 | | HI HOT GUARD HTR VOLTAGE | | | 41 | 7 |
| 278 | 850 | LS | 3003 | | 3003 | | HI HOT PRIM HTR CURRENT | | | 41 | 7 |
| 279 | 850 | LS | 3072 | | 3072 | | HI HOT PRIM HTR VOLTAGE | | | 41 | 7 |
| 280 | 850 | LS | 3003 | | 3003 | | HI HOT RED HTR CURRENT | | | 41 | 7 |
| 281 | 850 | LS | 3072 | | 3072 | | HI HOT RED HTR VOLTAGE | | | 41 | 7 |
| 282 | 850 | LS | 827 | | 907 | | HI CJ TEMP - COLD ZONE #1 | | | 41 | 7 |
| 283 | 850 | LS | 827 | | 907 | | HI CJ TEMP - COLD ZONE #2 | | | 41 | 7 |
| 284 | 850 | LS | 827 | | 907 | | HI CJ TEMP - HOT ZONE #1 | | | 41 | 7 |
| 285 | 850 | LS | 827 | | 907 | | HI CJ TEMP - HOT ZONE #2 | | | 41 | 7 |
| 286 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 1 SENSOR 1 | | | 41 | 7 |
| 287 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 1 SENSOR 2 | | | 41 | 7 |
| 288 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 2 SENSOR 1 | | | 41 | 7 |
| 289 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 2 SENSOR 2 | | | 41 | 7 |
| 290 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 3 SENSOR 1 | | | 41 | 7 |
| 291 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 3 SENSOR 2 | | | 41 | 7 |
| 292 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 4 SENSOR 1 | | | 41 | 7 |
| 293 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 4 SENSOR 2 | | | 41 | 7 |
| 294 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 5 SENSOR 1 | | | 41 | 7 |
| 295 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 5 SENSOR 2 | | | 41 | 7 |
| 296 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 6 SENSOR 1 | | | 41 | 7 |
| 297 | 850 | LS | 827 | | 907 | | HI CJ TEMP-SAMPLE 6 SENSOR 2 | | | 41 | 7 |
| 313 | 850 | LS | 987 | | 1227 | | HI ALIGN ARM TEMP | | | 41 | 7 |
| 314 | 850 | LS | 827 | | 907 | | HI SEM TRACK TEMP | | | 41 | 7 |
| 465 | 850 | | | | | | | NO | YES | 41 | 7 |
| 466 | 850 | | | | | | | NO | YES | 41 | 7 |
| 467 | 850 | | | | | | | NO | YES | 41 | 7 |
| 468 | 850 | | | | | | | NO | YES | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 7 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 469 | 850 | | | | | | | NO | YES | 41 | 7 |
| 489 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 490 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 491 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 492 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 493 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 494 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 495 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 496 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 497 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 498 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 499 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 500 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 501 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 502 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 503 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 504 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 505 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 506 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 507 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 508 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 509 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 510 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 511 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 512 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 513 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 514 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 515 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 516 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 517 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 518 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 519 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 520 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 8 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 521 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 522 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 523 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 524 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 525 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 526 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 527 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 528 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 529 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 530 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 531 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 532 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 533 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 534 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 535 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 536 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 537 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 538 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 539 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 540 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 541 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 542 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 543 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 544 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 545 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 546 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 547 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 548 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 549 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 550 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 551 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 552 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 553 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

# TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 9 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 554 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 555 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 556 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 557 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 558 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 559 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 560 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 561 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 562 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 563 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 564 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 565 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 566 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 567 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 568 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 569 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 570 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 571 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 572 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 573 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 574 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 575 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 576 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 577 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 578 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 579 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 580 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 581 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 582 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 583 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 584 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 585 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 586 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 10 of 14)

| ENTRY | CONN. NO. | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1587 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1588 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1589 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1590 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1591 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1592 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1593 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1594 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1595 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1596 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1597 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1598 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1599 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1600 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1601 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1602 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1603 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1604 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1605 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1606 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1607 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1608 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1609 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1610 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1611 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1612 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1613 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1614 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1615 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1616 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1617 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1618 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 1619 | 850 | | | | | | | OK | FAIL | 41 | 7 |

003 005 012 020 028 036 038 066 072 079 081 083

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 11 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 620 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 621 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 622 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 623 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 624 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 625 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 626 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 627 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 628 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 629 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 630 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 631 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 632 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 633 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 634 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 635 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 636 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 637 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 638 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 639 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 640 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 641 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 642 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 643 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 644 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 645 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 646 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 647 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 648 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 649 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 650 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 651 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 652 | 850 | | | | | | | OK | FAIL | 41 | 7 |

03 05 12 20 28 36 38 66 72 79 81 83

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 12 of 14)

| ENTRY | ICON NUMBER | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 653 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 654 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 655 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 656 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 657 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 658 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 659 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 660 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 661 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 662 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 663 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 664 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 665 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 666 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 667 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 668 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 669 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 670 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 671 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 672 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 673 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 674 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 675 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 676 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 677 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 678 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 679 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 680 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 681 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 682 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 683 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 684 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 685 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 003 | 005 | 012 | 020 | 028 | 036 | 038 | 066 | 072 | 079 | 081 | 083 |

TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 13 of 14)

| ENTRY NUMBER | CORR NO / MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|
| 686 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 687 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 688 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 689 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 690 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 691 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 692 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 693 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 694 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 695 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 696 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 697 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 698 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 699 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 700 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 701 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 702 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 703 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 704 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 705 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 706 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 707 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 708 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 709 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 710 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 711 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 712 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 713 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 714 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 715 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 716 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 717 | 850 | | | | | | OK | FAIL | 41 | 7 |
| 718 | 850 | | | | | | OK | FAIL | 41 | 7 |

003 005 012 020 028 036 038 066 072 079 081 083

# TABLE 2.7-5. POIC LIMIT SENSING/EXCEPTION MONITOR REQUIREMENTS (Sheet 14 of 14)

| ENTRY NUMBER | CORR NO | MONITOR TYPE | WARNING VALUES (YELLOW LINE) UPPER LIMIT | WARNING VALUES (YELLOW LINE) LOWER LIMIT | CRITICAL VALUES (RED LINE) UPPER LIMIT | CRITICAL VALUES (RED LINE) LOWER LIMIT/ EXPECTED STATE | EXCEPTION MONITOR MESSAGE | DI STATE CODE 0= | DI STATE CODE 1= | EXPID | TABLE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 719 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 720 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 721 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 722 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 723 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 724 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 725 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 726 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 727 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 728 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 729 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 730 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 731 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 732 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 733 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 734 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 735 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 736 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 737 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 738 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 739 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 740 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 741 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 742 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 743 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 744 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 745 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 746 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 747 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 748 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 749 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 750 | 850 | | | | | | | OK | FAIL | 41 | 7 |
| 264 | 851 | | | | | | | RUN | WAIT | 42 | 7 |
| 266 | 851 | | | | | | | NO | YES | 42 | 7 |
| 03 | 05 | | 12 | 20 | 28 | 36 38 | | 66 | 72 | 79 81 | 83 |

## 2.8. FLIGHT SOFTWARE REQUIREMENTS

This section of the Experiment/Facility Requirements Document (E/FRD) defines the Space Station Furnace Facility (SSFF) Data Management System (DMS) software functions required to support the Furnace Module-1. Furnace Module-1 will require the SSFF Furnace Control Unit (FCU) and Furnace Actuator Unit (FAU) software to provide networking, data processing, storage and data acquisition and control for Furnace Module-1. The following subsections define the required resources and data handling requirements of Furnace Module-1.

### 2.8.1 COMMAND SUPPORT

The SSFF software will support the issuance of commands by the Furnace Module-1 application software or commands issued by Tier 1 or the SSFF Core Control Unit (CCU).

### 2.8.2 DATA ACQUISITION

The SSFF software will support the acquisition of the Furnace Module-1 data defined in Section 2.7 of this E/FRD.

### 2.8.3 DATA PROCESSING

The SSFF software shall support limited processing of Furnace Module-1 data defined in Section 2.7 of this E/FRD.

### 2.8.4 DATA ROUTING/FORMATTING

The SSFF software shall support formatting and routing of Furnace Module-1 data, defined in Section 2.7 of this E/FRD, to the SSFF CCU.

### 2.8.5 DOWNLOADING APPLICATION SOFTWARE AND DATA

The SSFF software shall support downloading of Furnace Module-1 application software and data.

### 2.8.6 DOWNLOADING ANCILLARY DATA

The SSFF software shall support the retrieval and downloading of ancillary data to the Furnace Module-1 application software.

### 2.8.7 FDIR SUPPORT

The SSFF software shall provide fault detection, isolation, and recovery (FDIR) support for Furnace Module-1.

### 2.8.8 OPERATING SYSTEM SERVICES

The SSFF software shall provide operating system services for the Furnace Module-1 application software.

### 2.8.9 HEALTH AND STATUS DATA

The SSFF shall acquire health and status data from the Furnace Module-1 application software for SSFF storage or transfer to the SSF.

## 2.9. PHYSICAL INTEGRATION

This section describes the Furnace Module-1 integration/deintegration requirements and flow. Figure 2.9-1 illustrates the Furnace Module-1 physical integration activity flow from the beginning of prelaunch site activities, through deintegration after return from space.

Table 2.9-1 provides the integration facility requirements for each stage of integration. Table 2.9-2 describes the requirements and activities at each step of the integration process.

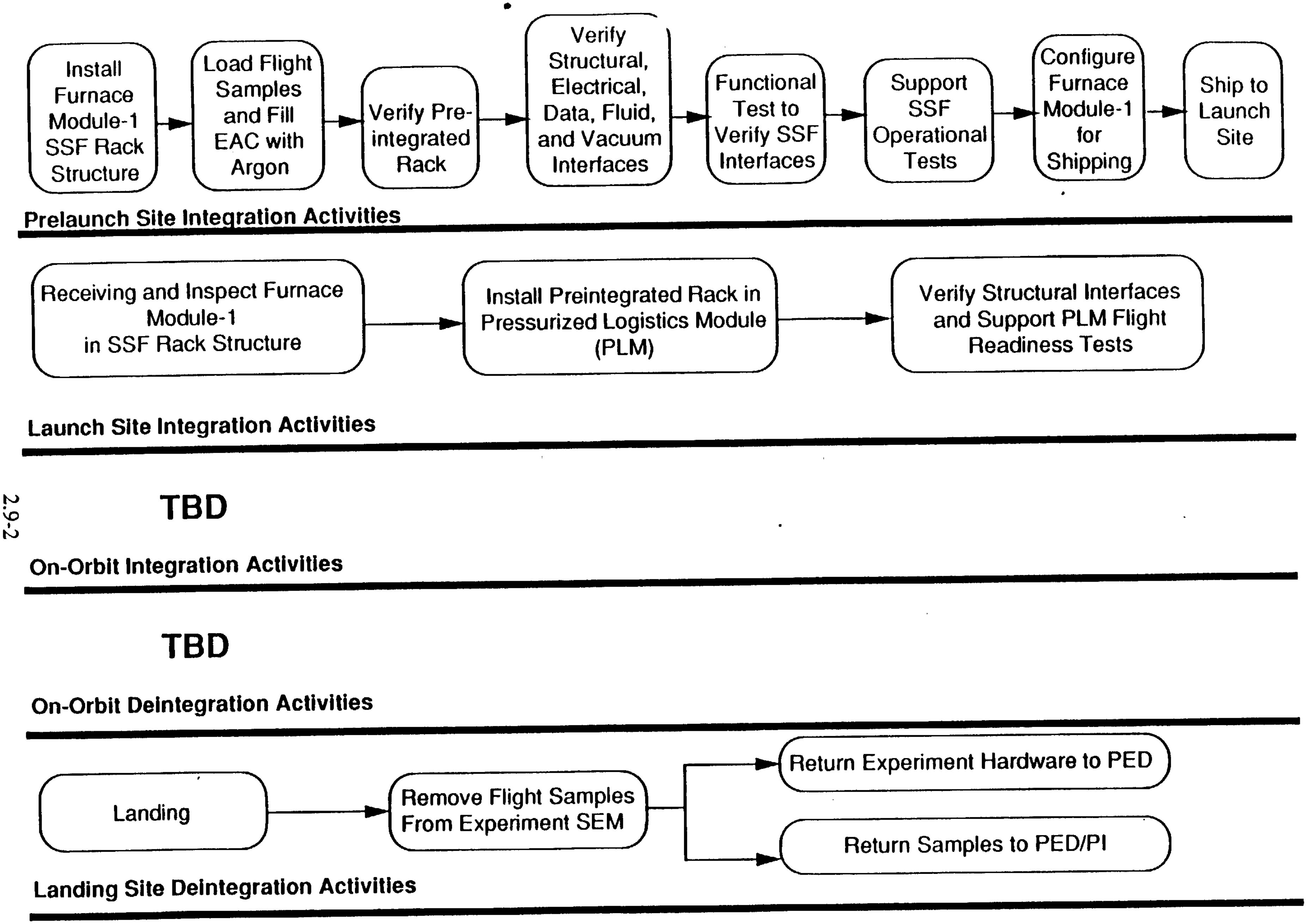



FIGURE 2.9-1. PHYSICAL INTEGRATION FLOW

TABLE 2.9-1. FURNACE MODULE-1 GROUND PROCESSING REQUIREMENTS
(Sheet 1 of 2)

( √ ) Experiment/Facility Preintegration
( ) Experiment/Facility Preparation
( ) Postmission Requirements

**Description of Planned Activities:**

Functional tests, sample loading, and closeout will be performed after the EAC is mounted on the rotation fixture.

Total Floor Space Required Including Space for GSE: 2000 $ft^2$

Ceiling Height Required: 10 ft

Overhead Crane Required: √ Yes ____ No Hook Height 8 ft

Facility Power Required:
√ 120 V, 1 F, 60 Hz
√ 208 V, 3 F, 60 Hz
√ Other 220 V, Single Phase, 60 Hz

Other Facility Support: Gases
√ $GN_2$ Liquids Water
√ GHe
Argon Other

Environment: √ Standard ____ Other

Hazardous Operations: ____ Yes √ No

Total Anticipated Use Time: 21 Days

**Other Facility Support Description:**

Mass spectrometer leak test

TABLE 2.9-1. FURNACE MODULE-1 GROUND PROCESSING REQUIREMENTS
(Sheet 2 of 2)

( √ ) Experiment/Facility Preintegration
(   ) Experiment/Facility Preparation
(   ) Postmission Requirements

Description of Planned Activities:

Functional tests, sample loading, and closeout will be performed after the EAC is mounted on the rotation fixture.

Total Floor Space Required Including Space for GSE: 2000 $ft^2$

Ceiling Height Required: 10 ft

Overhead Crane Required: √ Yes ___ No    Hook Height 8 ft

Facility Power Required
√ 120 V, 1 F, 60 Hz
___ 208 V, 3 F, 60 Hz
___ Other 220 V, Single Phase, 60 Hz

Other Facility Support: Gases
___ $GN_2$
___ GHe
___ Other
Liquids Water

Environment √ Standard ___ Other

Hazardous Operations: ___ Yes √ No

Total Anticipated Use Time: 3 Days

Other Facility Support Description:

Mass spectrometer leak test

TABLE 2.9-2. FURNACE MODULE-1 INTEGRATION REQUIREMENTS

| |
|---|
| **Description of Special Alignment, Calibration, Servicing, or Performance Verification and Estimated Time to Perform:**<br><br>TBD |
| **Identification of Any Constraints on Experiment/Facility Operations During Tests:**<br><br>TBD |
| **Description of Time-Critical Operations and Time Constraints:**<br><br>TBD |

## 2.10. OPERATIONS SUPPORT

Table 2.10-1 describes the physical and operational support required at the Ground Science Operations Control Center, during flight of the Space Station Furnace Facility (SSFF). Specifically, this facility has been designated as the Payload Operations and Integration Center (POIC) by the Space Station Freedom (SSF) Program.

TABLE 2.10-1. FURNACE MODULE-1 MISSION OPERATIONS SUPPORT

**COMMUNICATIONS REQUIREMENTS:**

**Downlink Data**

Three terminals

**Uplink Commands/data**

Three terminals

**Voice Communications**

Access for three

**Video**

Real-time and recorded

**SUPPORT EQUIPMENT:**

**Description**

**Dimensions**

**Power Requirements**

**Data Interface**

**REMOTE SITE INTERFACE**

**Location**

Off-line room for three scientists with access to monitor voice, video, and data.

**Describe Interfaces**

## 2.11. TRAINING OBJECTIVES

Presently, the training objectives are TO BE SUPPLIED. The following is a detailed generic explanation of the Integrated Requirements on Payloads (IROP) requirements.

Training required for a successful mission begins with the Principal Investigator (PI)/Payload Element Developer (PED) team identifying the training objectives for each task of the experiment. This section shall identify and describe training objectives, trainees, and instructors necessary for experiment operation. This section shall also identify the hardware and software trainers required to support flight-like training.

There are three categories of personnel who will require training to support the mission. Training objectives will be required for each category. These categories are:

- Crew
- POIC cadre
- PI/PED team

Table 2.11-1 identifies the major training objectives, the trainees, and the organizations responsible for developing and conducting required mission payload training. The Furnace Module-1 PED may develop and conduct the training or identify training to be provided by the Core facility PED and/or POIC training function.

The PI/PED team and the Payload Increment Manager (PIM) shall jointly define the training objectives for training at NASA facilities and for integrated training with other mission experiments.

The PIM shall define the increment-independent training objectives for the POIC cadre and will define the increment-independent training objectives for the crew and PI/PED team for training conducted at Marshall Space Flight Center (MSFC).

The PI/PED and PIM shall provide information detailing training objectives for each operational task. The requirements for a trainer and its fidelity shall also be specified. MSFC POIC will develop increment training requirements based on inputs from each payload flown on a specific increment.

### 2.11.1 PI/PED-DEFINED TRAINING

The Furnace Module-1 (FM-1) PI/PED shall define the training objectives necessary for the crew to understand the required science to operate the furnace module to obtain science data. The FM-1 PI/PED shall also define training objectives required for the POIC cadre and the PIM support of experiment operations. The FM-1 PI/PED will specify the training equipment such as flight-like hardware or trainers required to support the training objectives. Table 2.11-2 will identify the equipment to be supplied by the PI/PED and the equipment requested to be furnished by the SSFP.

TABLE 2.11-1. TRAINING PARTICIPATION

| Training Objectives | Trainee | Instructor |
|---|---|---|
| **PI/PED defined** | | |
| Science Background/ Experiment Objectives | Crew Cadre | SSFF PI/PED |
| FM-1 Systems Familiarization | Crew Cadre | FM-1 PED |
| FM-1 Operations | Crew Cadre | FM-1 PED |
| **PIM and PI/PED Jointly Defined** | | |
| Experiment Proficiency Training | Crew Cadre* | PI/PED, PTC |
| Integrated Training | Crew Cadre* | PI/PED, PTC |
| Simulations | Crew Cadre | PI/PED, PTC |
| **PIM Defined** | | |
| Increment Independent | Crew Cadre | POIC |
| POIC Facility Training | Cadre | PI/PED, POIC |

* Limited cadre participation

TABLE 2.11-2. FURNACE MODULE-1 TRAINING OBJECTIVES

| TRAINING OBJECTIVE | | TRAINEE | LEVEL | RESPONSIBLIITY | SIMULATOR REQUIRED | | | | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|
| NO. | DESCRIPTION | | | | YES/ NO | H/W FIDELITY | S/W Y/N | PROVIDER | |
| **1.0** | **SCIENCE BACKGROUND** | Crew, cadre | c/a | FM-1 PI/PED | NO | | | | Classroom Instruction |
| 1.1 | FM-1 Science Basis and Significance | Crew, cadre | c/a | FM-1 PI/PED | NO | | | | |
| 1.2 | FM-1 Science Objectives | Crew, cadre | c/a | FM-1 PI/PED | NO | | | | |
| 1.3 | FM-1 Science Theory | Crew, cadre | c/a | FM-1 PI/PED | NO | | | | |
| 1.4 | FM-1 Experiment Operations Philosophy | Crew, cadre | c/a | FM-1 PI/PED | NO | | | | |
| **2.0** | **FM-1 SYSTEMS FAMILIARIZATION** | | | | | | | | |
| 2.1<br>2.1.1<br>2.1.2<br>2.1.3<br>2.1.4<br>2.1.5 | Hardware<br>Rack location<br>Instrument Components<br>Stowage locations<br>FM-1 Command & Display<br>DMS Interfaces | Crew, cadre | b/a | FM-1 PI/PED | YES | a | YES | FM-1 PI/PED | |
| 2.2<br>2.2.1<br>2.2.2<br>2.2.3<br><br>2.2.4 | Software<br>DMS<br>Displays<br>Command Capabilities<br>Keyboard/MPAC/uplink<br>Timeline requirements | Crew, cadre | b/a | FM-1 PI/PED | YES | a | YES | FM-1 PI/PED | |
| 2.3<br>2.3.1<br>2.3.2 | Data Collection<br>Onboard<br>Downlink | Crew, cadre | b/a | FM-1 PI/PED | YES | a | YES | FM-1 PI/PED | |

The PI/PED shall supply objectives for training in the following areas. Other areas may also be included.

- Science Background and Experiment Objectives - Basis and significance of experiment, relationship to precursor experiments, specific objectives of experiment.
- Experiment Systems Familiarization (hardware and software) - Hardware and software elements [both on-orbit and ground support equipment (GSE)] that constitute the experiment system.
- Experiment Operations (nominal, malfunction, in-flight maintenance) - Hands-on training using breadboards, simulators, or flight hardware/software.

The knowledge and skill level for each operational task shall be identified. Tables 2.11-3 and 2.11-4 provide a means of coding the level of proficiency to which the student should be trained in order to accomplish the task. The information will also be used in developing course materials and training equipment.

### 2.11.2 PIM AND PI/PED JOINTLY DEFINED TRAINING

The PIM and the PI/PED team will jointly define the following training objectives:

- Experiment Proficiency Training - Repetitive exercise of specific experiment operations to develop and maintain operational skills at a flight readiness level.
- Integrated Training - Repetitive exercise of selected portions of the integrated timeline conducted within a simulated mission operations environment and with onboard crew operations as its focus.
- Simulations - Exercise of major portions of the integrated timeline conducted at the highest level of fidelity. Includes all payload elements and may include element of the SSF operations. Exercise crew, POIC cadre, PI/PED team, and SSF operations teams in nominal and contingency operations with emphasis on developing specific skills, strategies, and interactions.

Table 2.11-2 shall be completed using inputs provided by the PIM and PI/PED team. This information is normally obtained from the Increment Training Assessment Team (TAT). The TAT is composed of representatives from POIC, PIM, and PI/PED team who gather, review, and assess mission training needs. The TAT reviews mission documentation and obtains experiment operations and interface requirements for the PIs and from design reviews. It reviews available training equipment and assess the need for development of trainers by the PI/PED team or NASA to accomplish training objectives.

Experiment/PTC/POIC operational training interface needs such as data flow, power and thermal requirements, trainer control and display, and experiment GSE shall be identified in this paragraph.

TABLE 2.11-3. KNOWLEDGE LEVELS

| CODE | TRAINEE WILL BE ABLE TO: |
|---|---|
| a | Recall nomenclature, simple facts, or simple procedures involved in the task or operation. |
| b | Determine step-by-step procedures for sets of tasks or operations or for accomplishing important decisions. |
| c | Explain why and when each task or operation must be done. |
| d | Predict, identify, and solve problems related to the task or operation. |

TABLE 2.11-4. SKILL PROFICIENCY LEVELS

| CODE | TRAINEE WILL BE ABLE TO: |
|---|---|
| 1 | Accomplish most task activities only by being told or shown how. |
| 2 | Accomplish most of the behaviors in task or activity, but not necessarily to desired levels of speed or accuracy. |
| 3 | Accomplish behaviors in a task or activity at minimum acceptable levels of speed or accuracy. |
| 4 | Accomplish all behaviors in an activity at highest levels of speed or accuracy and be able to tell or show others how to do the activities. |

Note: This is not a design requirement, but an instrument to document training objectives that present an early need for training equipment and interfaces with the training facility.

## 2.11.3 PIM-DEFINED TRAINING

The PIM will define the following training objectives:

- Increment-Independent Training - Includes training on SSF and payload support systems and subsystems that remain relatively constant from increment to increment. Examples are Data Management System (DMS), SSF overview, SSF Caution and Warning System, etc.
- POIC Facility Training - Classroom and hands-on opportunities for training on specific POIC facilities such as Operations Management Information System (OMIS), communications protocols, and generic POIC procedures.

### 2.11.3.1 Increment-Independent Training - Crew

The increment-independent training for the crew on SSF systems and procedures shall be defined by Johnson Space Center (JSC) in JSC training documents and shall be provided at JSC/Kennedy Space Center (KSC).

Increment-independent training for the crew to support payload operations shall be defined by the PIM and provided at Marshall Space Flight Center (MSFC).

The training objectives, trainee responsibility, and any required training equipment shall be listed in Table 2.11-2.

### 2.11.3.2 Increment-Independent Training - PI/PED Team

The increment-independent training required for the PI/PED team to support the increment at MSFC is defined in this E/FRD. Trainee responsibility and required training equipment shall be listed in Table 2.11-2.

### 2.11.3.3 Increment-Independent Training - POIC Cadre

The increment-independent training required for the POIC cadre to support the increment is defined in the MSFC Increment-Independent Training Plan.

## 2.11.4 TRAINING SIMULATION

Experiment trainers will be developed by the PI/PED based upon analysis of training objectives, available training tools, existing trainers, and availability of training opportunities on flight hardware.

The FM-1 PI/PED shall participate in trainer development by identifying training needs in this document. The PI/PED shall provide detailed data inputs to the TAT and Payload Training

Requirement Document (PTRD) and shall participate in Payload Trainer design acceptance reviews.

Training objectives that require a trainer to accomplish the training task shall be listed in this paragraph outlining the overall desired capabilities.

Examples:

Joystick Operation - Capable of interaction with control panel and trainer software.

Scene Generation - Capable of tracking any predefined target.

### 2.11.5 TRAINING PARTICIPATION

The PI/PED shall participate as instructor or trainee in formal training programs as outlined in Tables 2.11-1, 2.11-2, 2.11-3 and 2.11-4. Schedules and detailed objectives will be developed and maintained in the User Payload Training Plan (UPTP).

## 2.12. ENVIRONMENTAL CONTAMINATION DATA REQUIREMENTS

Tables 2.12-1, 2.12-2, and 2.12-3 define the environmental contamination requirements for Furnace Module-1.

TABLE 2.12-1. FLIGHT . IRONMENTAL LIMITS

| | SENSITIVITY LIMIT | | | | EXPERIMENT GENERATED | | | |
|---|---|---|---|---|---|---|---|---|
| | OPERATING | | NONOPERATING | | OPERATING | | NONOPERATING | |
| | MIN | MAX | MIN | MAX | MIN | MAX | MIN | MAX |
| CONTAMINATION MODULE ITEMS | N/A | N/A | N/A | N/A | 0 | 0 | 0 | 0 |
| A. PARTICULATE SIZE (μm), number/m$^3$ | N/A | N/A | N/A | N/A | 0 | 0 | 0 | 0 |
| B. TRACE GASES (type & ppm) | N/A | N/A | N/A | N/A | - | - | - | - |
| PRESSURE (N/m$^2$) | | | | | | | | |

TABLE 2.12-2. EXTERNAL CONTAMINATION SOURCES

Does experiment/facility release (vent, purge) any material overboard on orbit?

Yes √ No ____

| PARAMETER | DESCRIPTION |
|---|---|
| FOs of Occurrence | ALL |
| Frequency | TBD |
| Duration | TBD |
| Composition | Argon, Nitrogen, Air |
| Phase State (solid, liquid, or gas) | Gas |
| Quantity or Rate of Release | 7 to 37 lbm* |

* Maximum, assumes active pressure control for four samples and one manual sample exchange.

## TABLE 2.12-3. ON-ORBIT EXTERNAL CONTAMINATION CONTROL SENSITIVITY

To understand and satisfy the on-orbit external contamination limits required by this experiment, please answer the following questions:

1. Is the equipment subject to corona? Yes☐ No☒

2. Are the experiment data affected by deposition of contaminants on sensitive surfaces? Yes☐ No☒

   - If yes, then answer the following:
     - Is the concern for deposition from particles, film/molecular, or both?
     - What is the FOV for receiving deposition from return flux?
     - What is the surface temperature of the sensitive element?
     - What are the limits of deposition in terms of experiment effects (e.g., 10% degradation at 1400 Å)?
     - List the FOs where deposition is a concern.
     - Is a controllable cover provided for non-data-collecting periods?

3. Is the experiment affected by induced contamination, such as water, $CO_2$, etc., in the FOV of the sensor? Yes☐ No☒

   - If yes, then answer the following:
     - Is the concern for particles, molecular, or both?
     - Breifly explain the allowable effects on the experiment; qualify the limits if possible (e.g., 10% modification of ambient environment composition; or 10% degradation of 1400 Å waveband; or allowable molecules/cm$^2$ column density).
     - List the FOs where induced contamination is a concern.